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*As a major transportation hub, Tocumen Airport can ill afford downtime. Page 32.*



*Think fuel contamination is nothing to worry about? Think again. Page 30.*

**Industry Trade Shows****POWER-GEN International 2009**

December 8-10, 2009; Las Vegas Convention Center, Las Vegas, NV  
The world's biggest show for power generation, featuring the EGSA On-Site Power Pavilion. For exhibit information, contact EGSA at (561) 750-5575, ext. 205 or e-mail Jalane Kellough at [J.Kellough@EGSA.org](mailto:J.Kellough@EGSA.org).

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**POWER-GEN Middle East 2010**

October 4-6, 2010; Doha, Qatar

The the region's leading exhibition and conference for the power generation, transmission and distribution and water industries. To exhibit, contact Denne Johnson at [dennej@pennwell.com](mailto:dennej@pennwell.com)

**Conferences****EGSA 2009 Fall Technical & Marketing Conference**

September 13-15, 2009; Colorado Springs, CO

Speakers will cover business and technical aspects of On-Site Power Generation and current industry trends. Registration information is available online at [www.EGSA.org](http://www.EGSA.org) or call (561) 750-5575.

**EGSA 2010 Annual Spring Convention**

March 14-16, 2010, St. Petersburg, FL

The Association's Annual Convention of Members. Speakers will cover business and technical aspects of On-Site Power Generation and current industry trends. For additional information, visit [www.EGSA.org](http://www.EGSA.org) or call (561) 750-5575.

**Schools****EGSA On-Site Power Generation Basic Schools**

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\*To be held concurrently with POWER-GEN International

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Check out our calendar at [www.EGSA.org](http://www.EGSA.org). EGSA Members: To list your meetings here, email your info to [D.Ferreira@EGSA.org](mailto:D.Ferreira@EGSA.org)



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Greg Linton  
2009 EGSA President

## Where Are We? Where Are We Going?

There is a folk myth that men don't—or, rather, won't—stop for directions when driving nor will they ever ask for help. In such situations, it's not uncommon for his wife to politely inquire, "Where are we?" She's likely to receive an eloquent response in return: "I'm not real sure."

While this article is not meant to choose sides in that debate, it is appropriate to point out how prophetically brilliant men really have been all these years. The central issue here is not the stubbornness and tenacity of the male gender, but the historically known delay in the development of technology. In fact, it is now widely reported that men were so far ahead of the curve that they began to prepare for recent technological advances decades ago. The proof? Witness the creation of Mapquest, the invention of the GPS (both hand held and in many cars today), GPS-equipped telephones and other directionally appropriate tools. Because men stood their ground and never succumbed to the habit of asking for directions, we have one less habit that needs to be broken now that technology has caught up. Simply brilliant! Since we finally have all these tools to identify our location and determine our direction, that leads us to the question: Where are we EGSA?

### Do You Hear Something?

There is a noticeable buzz surrounding EGSA this year. Its exact origin is unknown, but the buzz itself is worthy of discussion and casual study. If we can identify the source, we might foster it, build upon it and become stronger in the coming years as a result.

The buzz could be originating from our growth in **Membership**. During 2009, we reached an all time high of 702 members. That's a significant accomplishment! It reminds me of all the campaigns I have heard over the years designed to

enhance growth. One particularly memorable program had a cute ring to it: "Each One Invite One." The theory was that if we each invited someone to join us, our group would double.

What about EGSA? Would that work for us? Do we believe strongly enough in present events and future opportunities to ask or actively encourage someone to join our Association or to attend a Conference? I believe that if most of us believed strongly enough and acted on those beliefs, we would easily reach our membership goal of 1000 members.

Perhaps the buzz springs from all the **Committee** work being accomplished between conferences. This work includes the continuing development of the 5<sup>th</sup> Edition of the "EGSA Bible" aka the *On-Site Power Generation Reference Book*. Also, the Marketing Trends Committee has completed a survey of EGSA members to reveal how we see our market developing. Those results will soon be unveiled during the Fall Technical and Marketing Conference in Colorado Springs (see page 26 of this issue for a preview of the results). In addition, the Strategic Planning Committee continues to develop and work towards the release of our strategic long range plan. That plan called for the creation of the Green Committee in June; and it called for a formal marketing plan for the Association, which is presently under review by the Board of Directors.

Maybe the buzz is generated by the tremendous boost the **Certification** program has received this year from the announcement that Ferris State University has designated Caterpillar, Inc.'s Peoria Headquarters as an official Test Facility. It's a shrewd competitive move. By aligning the EGSA Generator Technician Certification Program with its own in-house factory training program, Caterpillar has simplified the method by which its

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technicians become professionally trained and EGSA Certified. As other high-profile manufacturers follow Cat's lead, EGSA's Certification Program will be offered to an expanding pool of highly trained service personnel.

On the other hand, it's quite possible that the air of general excitement this year comes from the success of our **On-Site Power Schools**. Each has been well attended and well received; two schools remain to be held this year.

**POWER-GEN** could be causing all the buzz; there's been a lot of uncertainty in our industry and the general economy, and yet this year's show is headed for a sellout with several new exhibitors making the EGSA Power Pavilion their POWER-GEN Show home.

Maybe the buzz is generated from the excitement and anticipation surrounding the **Fall Technical and Marketing Conference** in Colorado Springs. After all, registrations to date are ahead of last year, the host hotel is sold out, the number of spouses who have pre-registered is up significantly, the Green Committee will hold its first official meeting, and the "Springs Gang" volunteer welcoming committee has distributed useful information about local

anecdotes, points of interest and activities we can enjoy during our stay.

The buzz might even be from the **nominations** being considered for service on the Board of Directors and the Executive Board. Over 30 people were nominated for this year's election--that's another record! That is great news for EGSA's future; those who are not selected for the four available seats may be considered for future vacancies in years to come. It also identifies hardworking, service-oriented individuals who may be named as committee leaders.

Perhaps the buzz doesn't come from just one thing but is instead produced by some or all of these successes and leaps forward. It leads me to wonder: where are we going? Having survived 2008, I know we can't name a specific destination with any degree of certainty. However, many of these facts suggest both a predictable outcome and direction for EGSA. We are heading aggressively towards our goal of 1000 members. We will enter into 2010 in a financially favorable position. The number of EGSA Certified Technicians will grow significantly in the next 36 months. Leadership inside EGSA will continue to be fresh and strong and increasingly diverse. Committees will be vibrant and exciting

as we focus on completing agenda action items and maintaining committee communication between conferences. Fall 2009 has the potential to be a memorable season for EGSA--especially when placed in the context of an unprecedented economic period. Philosophically speaking, our glass is half full, and we are going to a place and time filled with expectation and hope.

Remember that myth of not asking for help I mentioned earlier? Here's where you become involved and, together, we dispel another myth. All of this progress and optimism are by-products of the intentional, focused efforts of the general membership as directed by an active Board of Directors. We need your help to enhance the programs already in place and to serve as the catalyst for future programs and advancements. If you don't become involved, will you find your place? If you have been involved in the past, will you continue to be involved? If you believe in EGSA, will you ask a colleague to join you as we team together to advance our industry and our Association? Will you mentor them to a place of active involvement in the association? If you will, we'll all benefit, and we can celebrate a bright future together. ■



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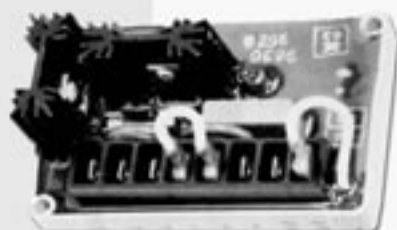
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George Rowley  
EGSA Director  
of Education

## David I. Coren Scholarship Program Winners Announced

We are very pleased to present the David I. Coren Memorial Scholarship winners for Academic Year 2009-2010. Please see page 16 for photographs and brief biographical sketches of each recipient. This year, applicants faced some rigorous competition; 21 students applied for scholarships this year but only 12 scholarships were awarded. Our winning scholars deserve special recognition for the academic achievements that enabled them to earn a scholarship within a very competitive environment.

The 2009-2010 academic year is the seventh year EGSA has awarded scholarships. This year, twelve \$2,500 scholarships were awarded. Since the first scholarships were awarded in 2003, EGSA has contributed \$135,000 to support the financial needs of students that planned to seek careers in the on-site power industry.

As you probably know, the scholarship program is named in honor of David I. Coren.

### Certification Milestone

EGSA's Certification Program is celebrating a recent, significant milestone. Caterpillar, Inc.—one of the world's leading manufacturers of generators and standby power generation equipment—has announced that it has sought and obtained designation from Ferris State University as an official Testing Center for the EGSA Generator Technician Certification Program. Like other manufacturers that will be making similar announcements in the near future, Caterpillar obtained the designation as a means of adding value for Dealers who send their technicians to the company headquarters for factory training. On-site Testing Centers centralize and simplify the training process by allowing technicians to complete their factory training, study for their EGSA Generator Technician Certification and take the test all in one convenient location. We applaud Caterpillar, Inc. and extend our appreciation for their support of the certification program.

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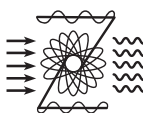
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We are also very excited that, as of press time, several other major manufacturers are now preparing to make similar announcements of their own.

All of these firms have made savvy, competitive moves by becoming official testing centers. Manufacturers who have extensively researched our certification program have identified important possible implications for future positioning within the marketplace. For example, it's possible that Manufacturers and Distributors may one day be required to have at least one certified technician on staff in order to successfully bid on new installations and even routine contract maintenance. Companies who have spotted this future trend are positioning themselves now to align the program with their existing training regimen and promote it to their technicians and their customers.

## Technician Update

As of the end of July, 274 techs have passed the certification test and become EGSA Certified Generator Systems Technicians. The number of certified techs working outside of the United States also continues to grow and now totals 22; there are 13 Certified Technicians in Canada, eight in Trinidad, and one in Guam. Since the program was launched, the overall pass rate is 83%. Congratulations to all that have passed the test and good luck to those who are

*Continued on page 13*

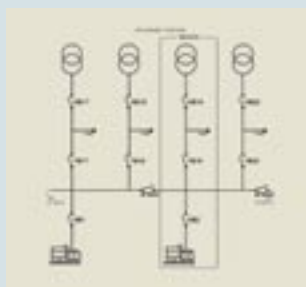
## About David I. Coren

David I. Coren received his Bachelor Degree from the University of Illinois while earning his CPA license. After working in the financial sector for nearly a decade, he began his career in On-Site Power at Zenith Controls, headed by his father and 1978-79 EGSA President, Arthur Coren. David became active in Zenith's business development group, strategic planning and marketing. He worked closely with Executive Vice-President and 1998 EGSA President Ron Seftick, and was eventually named President of Zenith Controls. At the same time, David became highly active in EGSA by serving as a Conference Presenter, serving on the Convention Planning Committee and chairing the committee in 1998. Sadly, in April of 1999, he was diagnosed with a brain tumor; in September of 2000, we lost him.

David is best remembered by his strong desire to succeed, his potential for leadership within EGSA and his ability to motivate his fellow Association Members in serving the industry. EGSA established the David I. Coren Memorial Scholarship Fund as a means to help those wanting to contribute and work in the On-Site Power Industry. Since its inception, EGSA has provided scholarships to over 60 deserving students and has enabled them to pursue meaningful On-Site Power careers.



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Herb Whittall  
EGSA Technical Advisor

## Code-Making News Bites

There's a lot going on with quite a few organizations this month. Following are some of the more important news items regarding code changes, activities and other code-related events.

### NFPA Electric Code Seminars

NFPA is offering Electric Code Seminars around the country. NFPA is especially recommending NFPA 101 *Life Safety Code* and NFPA 70E *Electrical Safety in the Workplace*. For time and dates please contact [nfpalearn.org](http://nfpalearn.org) or call 800-344-3555 for information and registration.

### OSHA Updates Standard

OSHA has made its first update since 1981 to its General Industry-Electrical Standard and the update is based on the 2000 version of NFPA 70E and 2002 version of NFPA 70. Complete details of OSHA 1910 subpart S can be found in the Federal Register for February 14, 2007 or visit [www.osha.gov](http://www.osha.gov) or [http://www.access.gpo/su\\_docs/fedreg/frcont07.html](http://www.access.gpo/su_docs/fedreg/frcont07.html). NFPA 70E itself was updated and republished in January 2009 and its scope broadened to include operation, maintenance and demolition as well as installation activities.

### Assistance Sought for IEEE Chapter

Herb Daugherty (EGSA's secondary codes and standards representative) attended the recent IEEE Industrial and Commercial Power Systems (I&CPS) meeting in Calgary. I&CPS published the IEEE Color Book Series of IEEE Recommended Practices to help engineers and architects design electrically safe buildings. These color books are being replaced by a base book, which consists of general information common to all the previous books. Look for the new series of "Dot Standards" to address specific applications that the previous "Color Books" addressed individually.

Herb Daugherty will chair the Working Group for Base Book, Chapter 3—"Power Systems Generation and Delivery Equipment". This chapter will include topics such as Generators, Transformers, Fuses, Circuit Breakers, Relays, Switchgear/Switchboards/Panelboards, Motor Controllers and Equipment Types (voltage classes, air vs. vacuum, etc.) Daugherty is seeking EGSA members with particular expertise to help him write various portions of this chapter. Please contact him at [hddaughert@aol.com](mailto:hddaughert@aol.com)

The old Orange Book, "Emergency and Standby Systems in Commercial and Industrial Buildings" will be replaced by Dot Standard 3005. Daugherty will be working on 3005.2 "Recommended Practice of Generator Systems for use in Emergency and Standby Systems". If you have expertise in this area and can donate your time, he would gladly accept your help! Contact Herb at [hddaughert@aol.com](mailto:hddaughert@aol.com).

### Miscellaneous Items

The IEC is still pursuing its document on Dependability, IEC 60300-1.

UL 1236 Ed. 7 *Standard for Battery Chargers for Charging Engine-Started Batteries* has a preliminary review out. The two items are:

1. Temperature limits for use in greater than 25°C ambient.
2. New supplement SE for Battery Chargers for Engine-Driven Emergency and Standby Power System Generators.

The NFPA's Report on Comments (ROC) for 23 documents has been published and comments are now being sought. Comments are also being sought for the 2011 Edition of the *National Electrical Code* (NFPA 70). The comment deadline is October 23. For information, visit [www.nfpa.org](http://www.nfpa.org). ■



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Continued from page 11

preparing to take it!

## Reference Book Update

The Education and Reference Book Committees continue to make progress on preparing the new edition for publication. The Author Selection Committee continues to process and approve authors, and we should soon begin to receive draft chapters for review and editing from approved authors. We continue to identify new chapter and topic authors. Next, we will begin the process of selecting a professional style editor to edit each chapter. At this time, it is premature to anticipate when the book will be ready to print.

If you have questions or comments about these or any of EGSA's educational endeavors, please contact George Rowley, EGSA Director of Education at [G.Rowley@egsa.org](mailto:G.Rowley@egsa.org) or 561-237-5557. ■

## U.S. Certified Generator Technicians by State

Periodically, we report the number of Certified Techs in each state. Here are the most recent figures.

Alabama . . . . .	1	Missouri . . . . .	2
Alaska . . . . .	1	Nevada . . . . .	2
Arizona . . . . .	14	New Hampshire . . . . .	4
California . . . . .	17	New Jersey . . . . .	8
Colorado . . . . .	4	New York . . . . .	11
Connecticut . . . . .	9	North Carolina . . . . .	13
Florida . . . . .	17	Ohio . . . . .	19
Georgia . . . . .	25	Oklahoma . . . . .	2
Idaho . . . . .	2	Pennsylvania . . . . .	12
Illinois . . . . .	4	South Carolina . . . . .	5
Indiana . . . . .	2	Tennessee . . . . .	3
Iowa . . . . .	2	Texas . . . . .	11
Kentucky . . . . .	1	Utah . . . . .	4
Louisiana . . . . .	2	Virginia . . . . .	12
Maryland . . . . .	5	Washington . . . . .	1
Massachusetts . . . . .	7	West Virginia . . . . .	5
Michigan . . . . .	19	Wisconsin . . . . .	2
Minnesota . . . . .	1		



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It's no secret that technology is becoming more complex—not less—and that makes today's On-Site Power Generation System a lot more expensive. End-users—your customers—don't want just anybody with a basic knowledge of mechanics to install and maintain their equipment. They want to be confident that all work has been performed by qualified personnel. Suppliers want assurance that skilled technicians are performing maintenance and repairs to guard against unnecessary returns or warranty repairs.

## AS GOOD AS YOUR WORD

In the past, your word was the only assurance that your technicians are skilled and knowledgeable. But now, through EGSA's Electrical Generator Systems Technician Certification Program, there is a way that you can back up those words with objective evidence of your technicians' proficiency.

EGSA offers you a big advantage: For the first time in our industry, we have an objective and accurate way to determine generator technician proficiency. That means that the same standards will be used to measure the skills and knowledge of technicians from Maine to Manitoba and Mexico. Yes, Manitoba and Mexico! EGSA has determined that there is no reason why the test could not be fairly applied to any NAFTA technician.

## WHAT ARE THE BENEFITS?

For the Employer, certification helps ensure that your technicians have the critical knowledge and skills to succeed in their jobs. And everyone will be comfortable knowing that your certified technicians' expertise has been confirmed by the industry organization through a program that was developed by a university. Encouraging and helping your technicians become certified signifies your commitment to the highest of standards. Plus, it lends an added level of credibility to your firm and can

sharpen your competitive edge. Employing certified technicians will promote customer satisfaction and you won't have to be shy about offering assurance that your technicians are qualified. Certification can also help you select potential new hires, analyze job performance, evaluate employees and motivate technicians to enhance their skills and knowledge.

Think about the message that certification sends to those with whom you do business. Why would anyone want a technician who isn't certified performing critical maintenance or repair tasks? Employing certified technicians gives you an added tool with which to market your business.

As our members have said, "We've seen too many backyard mechanics damage expensive equipment. This program will provide credibility for my company and will help build pride and a commitment from technicians to be the best."

## FOR THE TECHNICIAN

Certificate holders benefit too. Certification shows employers, clients, and associates that you are committed as a professional. It provides recognition of your knowledge and skill, shows your commitment to your profession and can help with job advancement. Certification is a mark of excellence that you carry with you everywhere you go.

Acquiring certification indicates that you have the knowledge and proficiency required to perform as an Electrical Generating Systems Technician professional. Becoming certified can increase your salary, enhance your skills, and make your job more satisfying.



*Certification helps ensure that your technicians have the critical knowledge and skills to succeed in their jobs.*



## THE CERTIFICATION TEST

EGSA collaborated with Ferris State University to develop the certification test and program. Through a scientific process, our panel of technical experts identified 12 duty areas (such as “Basic Electricity”) and 61 tasks (such as “demonstrate knowledge of AC electrical theory”) within the duty areas. The duty areas and tasks were ranked and rated in terms of their relative importance, the frequency with which a task is performed, and skill level (i.e. Senior/Expert; Intermediate; and Entry Level.) All this data was combined to develop the certification test that was then statistically validated through a pilot test taken by generator technicians from across the United States.

## WHO CAN TAKE THE TEST?

There are no pre-qualifications for taking the EGSA Certification test. We recommend three or four years of field experience before taking the test. Technicians who have had formal education in On-Site Power Generation (a degree or certificate from a technical school or community college) may need less field experience. Those who pass the test will have a comprehensive knowledge of basic electricity, the functions of a gen-set’s mechanical and electrical components, the interactions and relationships among components and an understanding of various elements of the installation, service, maintenance, and repair of gen-sets and On-Site Power Generation Systems.



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| • Troubleshooting System Problems             | • Generators/Alternators |
| • Auxiliary Support Systems                   |                          |

## USE THE STUDY GUIDE TO PREPARE!

Use of the program’s Study Guide is an excellent way to help technicians prepare for the test and should clearly indicate if they are ready to take (and pass) the certification exam. In addition to useful formula pages, the guide contains almost 200 multiple choice practice questions that cover all parts of the certification test. In addition to identifying the correct answer, the guide also indicates in most cases why a particular choice is correct and why the others are incorrect. The

Guide also identifies resource material where technicians can get additional or more in-depth information about a given topic.

Need more information? Visit us online at [www.EGSA.org](http://www.EGSA.org) to find extensive and detailed information about the certification program. Or contact EGSA Director of Education George Rowley via e-mail at [G.Rowley@EGSA.org](mailto:G.Rowley@EGSA.org).

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# Meet the David I. Coren Scholarship Recipients for 2009-10

The Electrical Generating Systems Association (EGSA) Scholarship Committee has completed its review of credentials and ranking of applications and, at the direction of the EGSA Board of Directors, has awarded twelve \$2,500 scholarships for the 2009-10 academic year.

The David I. Coren Scholarship Program provides financial assistance to qualified students and is designed to have a positive impact on personnel shortages in our industry and will be an excellent vehicle for enhancing awareness of the industry. The competitive, merit-based scholarships

are awarded to qualified students who plan on pursuing a career in the On-Site Power industry. In addition to their career focus, applicants must be full-time students, have a declared major related to On-Site Power, and maintain a minimum 2.8 GPA.

EGSA launched the David I. Coren Scholarship Program in 2002 to promote awareness of the On-Site Power Generation industry and to generate interest in On-Site Power careers. The move came in response to the growing need for skilled On-Site Power personnel. While the Association has an established and widely recognized

On-Site Power School education program of its own, the Board of Directors noted the industry's need for highly educated individuals from a variety of applicable disciplines.

Information detailing the David I. Coren Memorial Scholarship program—including a Scholarship Program Brochure and an Application Packet—is available on the Association's web site at [www.egsa.org](http://www.egsa.org). For additional information, individuals may contact George Rowley, EGSA Director of Education at [G.Rowley@egsa.org](mailto:G.Rowley@egsa.org) or 561-237-5557. ■

## Dwayne Aquino

My name is Dwayne Aquino, and I come from the island of Guam. My hobbies include outrigger canoeing and building vehicles to do whatever I'm up to, be it rock-crawling, drag racing or cruising. Following high school, I attended Universal Technical Institute (UTI). I graduated from the core program in January 2009 with a Director's List Award, an "excellence" in attendance, and a 3.6 GPA. Following graduation, I completed the Cummins Power Generation course and moved to Portland, OR to live and spend time with my brother, Frank. I hope to soon become a part of the Cummins Northwest Power Generation team and grow with my new trade. I knew the Portland job market would be tough, but as long as I'm with family, I'm happy. If any company in Portland is looking for a gentech, please feel free to give me a shot. Thank you!



## Chris Davidson

My name is Chris Davidson, and I am originally from Oklahoma. My hobbies include fishing, hunting, golf and shooting. I am presently enrolled in the Electrical Power Generation program at Linn State Technical College. I am on the Dean's list and maintain a 3.985 GPA. I expect to receive my Associate Degree in Electrical Power Generation upon my December 2009 graduation. During my school career, I have served as student government treasurer, VIP Student Ambassador and a Math and Communication Tutor. Currently, I am Linn State's Student Regent and the recipient of the 2009 President's Award. My goal is to continue my school success in the field and to reach a level I have yet to consider possible. Family is extremely important to me.



## Clifford G. Milner

My name is Glenn Milner, and I am from Charlotte, NC. I am currently attending Clemson University where I will graduate in December 2009 with a degree in Mechanical Engineering. I am spending Summer 2009 completing the fourth term of my General Electric co-op in commercial management for steam turbines and generator upgrades. This past spring, I was voted "Senior of the Year" by the Clemson faculty, which was a great honor. Last school year, I had the honor of serving as president of Pi Tau Sigma, the mechanical engineering honor society. We organized a social, golf tournament, and many other fun events for mechanical engineering students and faculty. In the fall, I hope to complete my honors research; my team is designing a low-frequency, energy-harvesting wireless mouse. In my spare time, I enjoy playing sports, working out, running, playing piano, and saltwater fishing.



## Chase McDonald

My name is Chase McDonald, and I am from New Iberia, LA. I love to be outdoors, hunting and fishing. I am currently attending the OSU Institute of Technology in Okmulgee, OK where I am majoring in Diesel & Heavy Equipment with an Associate in Applied Science. I expect to graduate in summer 2010. I am presently employed as a "Select Tech" in a program sponsored by Aggreko. Under the program, I attend school for two months and then work as an intern and apply what I have learned at school. My ultimate career goal is to be part of the team that takes Aggreko to the next level.





**Christopher Ryan Smith**

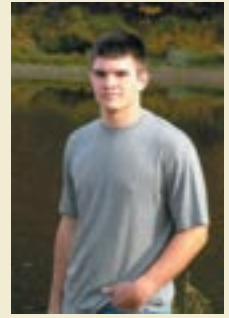
My name is Christopher Ryan Smith. I was born and raised in Missouri and currently make my home in Pleasant Valley. I am presently enrolled at Linn State Technical College, which is located in Linn, MO. I will receive my Associate Degree in Electrical Power Generation Technology in December 2009. I'm in the A+ program, on the Dean's List and I maintain a 3.6 GPA.



While my favorite pastime is rebuilding my 1980 Camaro, I also enjoy playing hockey and watching the games on T.V. I love to spend as much time as I can swimming and boating. I am currently employed by Sears Grand where I work in receiving and merchandise pickup. I transport customers' orders from the store to their cars, and I unload incoming trucks. At Linn State, I am a resident assistant (RA) in the dorms where my duties range from assisting students who have locked themselves out to cleaning hallways and more. My ultimate career goal is to be employed as a generator technician. EGSA's scholarship is important to me because my A+ program ends this summer, and I want to continue my schooling until December so I can graduate with my degree in generators. Without EGSA and this scholarship, I would be hard pressed to finish my schooling.

**Nathan Shepherd**

My name is Nathan Shepherd, and I grew up in Eldon, MO near the Lake of the Ozarks. For the past two years I've attended Linn State Technical College, majoring in the Medium/ Heavy Truck program (from which I graduated in May 2009). I am currently enrolled in Linn State's Electrical Power Generation program. This December, I will graduate from the Electrical Power



Generation program and receive two Associate in Applied Science degrees. I've maintained a 3.85 GPA while at Linn, received the "Tech Prep Student of the Year 2007", and won an automotive scholarship. I've been on the Dean's List the entire time I've been at Linn Tech; was named "Outstanding Student of the Medium/Heavy Truck program"; and I received a CAT Award for Excellence in 2009. My extracurricular activities have included serving in Student Government as an officer; being a member Phi Theta Kappa; and participating as a member of Skills USA. Outside of school, I worked for three years as a mechanic at Eldon Freightways, a small trucking company in Eldon. I hope that, after graduation in December, I'll find employment with a company that services generators and will allow me to work my way up.

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### John Albany

My name is John Albany; my friends call me Jalbs or Johnny Jalbs. I have lived in Gamet Valley, PA for my entire life. I just graduated from Gamet Valley High School in Glen Mills, PA this past June. I plan to attend the Pennsylvania College of Technology in the fall to study Electric Power Generation, a two-year program. Throughout high school, my GPA has been a solid 3.3-3.4.



As for extracurricular activities, I played high school football for four years and basketball for two years. I stopped basketball because football was just about year round. I am working this summer at The Home Depot as a cashier until I go up to school on August 15—I can't wait!

My ultimate career goal is just to be somewhere I enjoy working and making a good amount of money at the same time. But as long as I enjoy what I am doing, then things should be good no matter what happens.

### Jason Hirtzel

My name is Jason Hirtzel, but people know me as Jay. I live in Colden, NY, and I attend the Pennsylvania College of Technology in Williamsport, PA. I am majoring in Electric Power Generation Technology and maintain a 4.0 GPA. I will receive my Associate Degree in May, 2011. I am part of the Phi Theta Kappa society and, outside of school, I am part of the National Honors Society for my high school years and Universal Technical Institute. I am also a proud to be an Eagle Scout.




I love being outside, doing anything from backpacking and biking to climbing and white water rafting. I also like going to tractor pulls, drag racing, and demo derbies. Once I finish school, I will move to Colorado to start my career and live out my dreams. It is a paradise for the outdoors and words cannot describe my anticipation.

Thanks to all who helped me along the way, starting with my parents and my close friends—all of whom pushed and encouraged me. Thanks to my wrestling coach for teaching me life's greatest lesson and, of course, the "Big Man" upstairs. I love you all.

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**Kyle Norek**

My name is Kyle Norek, and I live in Portville, NY. I am starting my second year of studying Electric Power Generation at the Pennsylvania College of Technology in Williamsport, PA. The Power Generation program is a two-year degree, so I expect to receive my Associate Degree in May of 2010. I currently have an overall GPA of 3.6. In 2008, I graduated with an Associate Degree in Diesel Truck Technology, also from the Pennsylvania College of Technology. I worked on trucks while I was going to school, and while I enjoyed it, I wanted to broaden my horizons. So I decided to enroll in the Power Generation program.

Currently, I am interning with Penn Power Systems (Division of Penn Detroit Diesel Allison) in Buffalo, NY for the summer. I am working with a generator field service technician who covers the western Southern Tier of New York and North Central Pennsylvania. I enjoy field service work and hope to make it my career after I graduate.

**George Bopst**

My name is George Bopst, and I live with my parents and younger sister in Westminster, MD. I attend Pennsylvania College of Technology in Williamsport, PA. My major is Electric Power Generation, a two-year program. I've completed my first year, and currently am in the summer internship portion of the program. I made the Dean's list my first semester at PCT. The Beta Epsilon Upsilon Chapter of Phi Theta Kappa, an International Honor Society of two-year college students, extended membership to me for my GPA of 3.47.

In high school, I took diesel classes at the Carrol County Career and Technology Center, and interned at Alban Caterpillar in Elkridge, MD. I'm doing my college summer internship there as well and plan to continue employment there after I graduate in May 2010.

When I'm not working or studying I enjoy skiing, dirt bike riding, scuba diving, boating, and of course, playing video games (after all, I am a college student).




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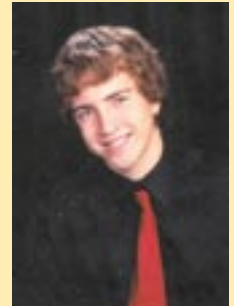
**Robert Petersen**

My name is Robert (Rob) Petersen, and I live in Kapaa, Hawaii on the island of Kauai. I am married to Tiffany. Together we have two kids: a daughter, Jaden, who is seven years old; and a son, Triston, who is four years old. I attended Universal Technical Institute in Avondale, AZ. I graduated with a 4.0 GPA in April, 2009 with an Associate of Occupational Studies Degree in Diesel and Industrial Technologies. I also received many Cummins Power Generation Certificates. I am also a part of Alpha Beta Kappa. I received six Student of the Course Awards, nine Director's (Dean's) List honors, and I maintained a 99.98% attendance rate through several months of 14-hour+ schooldays. In addition to my regular schoolwork, I served as the first Student Council President and helped raise hundreds of dollars for local charities. In my free time I researched hydrogen power and created my own cell. Now I enjoy snorkeling, hiking and spending quality time with my family. I am currently employed as the facilities maintenance and collateral duty safety officer at Kilauea Point National Wildlife Refuge. As the safety officer, it is my responsibility to prepare for hurricanes and other catastrophic events. My understanding of power generation is proving to be a blessing. I have a strong passion to continue my education and safe work habits in the field. I hope to help revolutionize how we create and consume electricity. Maholo Nui Loa and Aloha.

**Thomas Geib**

My name is Thomas Geib, and I live in Grand Island, NY. I attended Ohio Technical College and received a diploma for Auto-Diesel Master Vehicle Technology with Alternative Fuel Vehicle Technology.

I received a diploma in Power Generation. I have also received National Alternative Fuels Training for Overview of Biodiesel and Oxygen Sensor Theory and Operation. My overall GPA was a 3.63. In my spare time, I play hockey, ride my motorcycle, play guitar, and play on my custom-built computer. I am currently looking for a power generation job and hope to one day run a business of my own.

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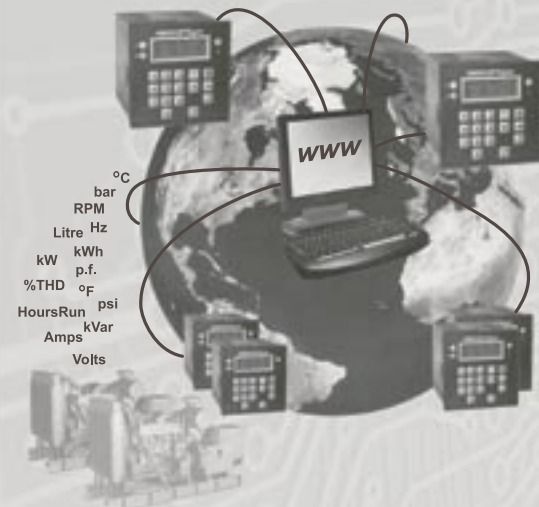
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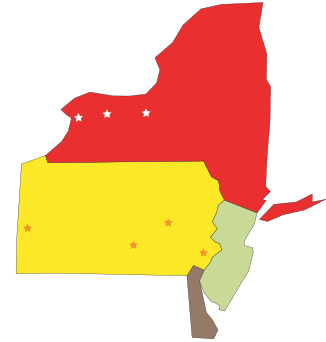
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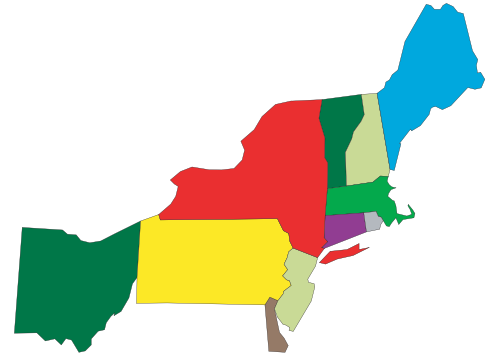
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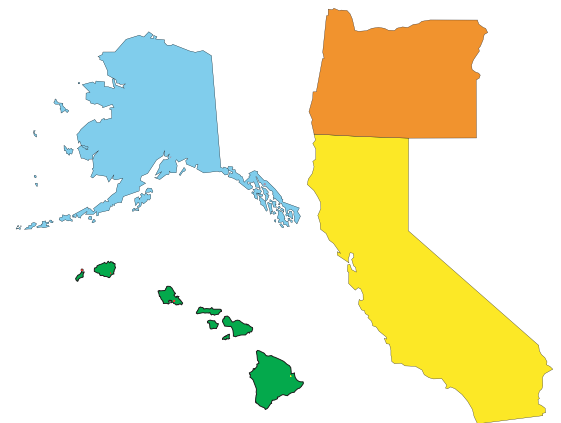
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# Calibrating Total Market Size From Quarterly EGSA Survey Results

By Joe Zirnheld, Consultant, Power Systems Research

For nearly 20 years, the EGSA Marketing Trends Committee has overseen the Quarterly Generator Shipment Survey in an effort to provide EGSA Members with concrete data concerning the number of Alternating Current (AC) electrical generators manufactured throughout the world. Interest in the Survey has always run high and, as a result, the Committee is driven to continually improve the product in an effort to maintain its value to EGSA Members.

Recent Committee meetings have indicated that EGSA Members want to know what information the Survey may be lacking when one considers the fact that not every industry manufacturer is an EGSA Survey participant. In addition, many of the reported alternator shipments in some power ranges are actually destined for non genset applications. What impact do these factors have on the Survey results?

A sub-committee was formed to investigate the Committee's key questions concerning Survey participation. Specifically, the sub-committee was asked:

1. What is the total market size for generators in North America?
2. What differences result from the lack of participation from some important suppliers?
3. How can we develop methods to bias Survey results to account for non-participants?

The answers to these key questions will provide a framework for further discussion at future EGSA Market Trends committee meetings.

## Analysis

Using the Power Systems Research OE Link™ database, the sub-committee was able to estimate the total market size for reciprocating engine powered gensets in North America to be in the range of 800,000 to 1,000,000 units per year when all power ranges and all fuel types are considered. The database tracks the production of all gensets powered by a reciprocating engine (see Table 1 above).

While the EGSA Generator Shipment Survey generates valuable data, it does not provide a complete picture of the market simply because not every generator manu-

Table 1: Genset Production	EGSA kW Range	2006	2007	2008
	<10.0 kW	819,460	805,147	629,645
	10.1 to 15.0 kW	77,634	82,844	68,600
	15.1 to 30.0 kW	29,072	29,491	25,572
	30.1 to 50.0 kW	25,175	25,531	23,466
	50.1 to 150.0 kW	38,394	38,561	34,002
	150.1 to 250.0 kW	9,908	9,985	8,707
	250.1 to 500.0 kW	9,067	9,174	7,419
	500.1 to 750.0 kW	2,580	2,646	2,180
	750.1 to 1000.0 kW	1,911	1,942	1,653
	1000.1 to 2000.0 kW	4,372	4,413	4,032
	2000.1 to 6000.0 kW	259	261	232
	<b>Total</b>	<b>1,017,832</b>	<b>1,009,995</b>	<b>805,508</b>

Table 1: Total assumed North American genset production, including Non-EGSA reporters. Source: PSR OE Link™ database.

Table 2: Shipments to North America	EGSA kW Range	2006	2007	2008
	<10.0 kW	182,058	168,431	119,251
	10.1 to 15.0 kW	13,870	18,799	21,930
	15.1 to 30.0 kW	44,959	39,325	28,338
	30.1 to 50.0 kW	14,459	12,026	11,453
	50.1 to 150.0 kW	35,224	28,235	25,663
	150.1 to 250.0 kW	6,896	6,920	6,825
	250.1 to 500.0 kW	7,137	6,992	6,646
	500.1 to 750.0 kW	4,946	4,392	3,187
	750.1 to 1000.0 kW	2,281	1,917	3,007
	1000.1 to 2000.0 kW	2,994	3,432	3,026
	2000.1 to 6000.0 kW	1,298	1,617	1,660
	<b>Total</b>	<b>316,122</b>	<b>292,086</b>	<b>230,986</b>

Table 2. EGSA reported shipments to North America (includes domestically produced generator ends remaining in North America and imports). Source: Compilation of EGSA Quarterly Generator Shipment Survey.

facturer is a Survey participant. Currently, no estimates or approximations are being made for those who decline to participate.

As one can see in Table 2 (above), the portion of the market reported in the EGSA Survey is around 300,000 units per year. In comparing Table 1 (North American genset production) with Table 2 (shipments to North America) a noticeable gap may be found. The sub-committee reported that this gap is due in varying degrees to the following possible reasons:

- Differences may exist due to variations in the prime mover driving the generator ends tracked in the Survey. Table 1 considers the production of reciprocating engine powered gensets only while Table 2 could potentially include generator ends intended to be used by other prime movers such as PTOs, gas turbines, steam turbines, etc.
- Table 1 was created using the OE

Continued on page 24

# Proof positive that good things come in small packages



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Table 3: EGSA Survey Apparent Coverage	EGSA kW Range	2006	2007	2008
	<10.0 kW	22.2%	20.9%	18.9%
	10.1 to 15.0 kW	17.9%	22.7%	32.0%
	15.1 to 30.0 kW	154.6%	133.3%	110.8%
	30.1 to 50.0 kW	57.4%	47.1%	48.8%
	50.1 to 150.0 kW	91.7%	73.2%	75.5%
	150.1 to 250.0 kW	69.6%	69.3%	78.4%
	250.1 to 500.0 kW	78.7%	76.2%	89.6%
	500.1 to 750.0 kW	191.7%	166.0%	146.2%
	750.1 to 1000.0 kW	119.4%	98.7%	181.9%
	1000.1 to 2000.0 kW	68.5%	77.8%	75.0%
	2000.1 to 6000.0 kW	501.2%	619.5%	715.5%
	<b>Total Captured*</b>	<b>67.6%</b>	<b>60.4%</b>	<b>63.5%</b>
	<b>Total Captured Overall**</b>	<b>31.1%</b>	<b>28.9%</b>	<b>28.7%</b>
*In Power Ranges >10kW **All power ranges				

Table 3. EGSA Survey apparent coverage (by EGSA kW range and overall).

**Link™** database from PSR, which tracks the production of reciprocating engine powered gensets. Therefore, the kW rating associated with a particular genset from the database and broken down to the EGSA kW range divisions will be based on the kW rating of the operating genset and not necessarily the kW rating or maximum capacity of the generator end which is being tracked in the EGSA Survey and is the source of Table 2. Typically, the kW differences here should be unsubstantial, but these differences could account for some units being classified into one kW range in Table 1 while the same generator would be classified

into the bordering kW range upward or downward in Table 2.

- Generator unit shipment figures for non-participating generator manufacturers are not accounted for in the EGSA Survey. It is important to remember that in addition to domestic producers, this also includes non-reporting manufacturers who may import generators into North America. The sub-committee found that these non-reporting generator manufacturers are more of a factor in the gap at lower kW ranges <10 kW where there are a greater number of small gasoline portable consumer units not captured in the EGSA numbers.

Total coverage of the EGSA Survey is normally about 60% when considering power ranges above 10 kW. When including the smaller units <10kW, there are potentially many unreported generator ends. As a result, Survey coverage is not as complete and drops to around 30%.

The sub-committee found a few situations where the EGSA apparent coverage is greater than 100% and is most likely due to one of the following reasons:

- There are differences in the reported kW ratings of the generator ends from the EGSA Survey and the rating of the actual genset being counted in the total market numbers from the PSR database. As a result, there may be one kW range where the EGSA coverage is extremely low and a bordering kW range with coverage greater than 100% because some of the generator ends from the EGSA Survey were categorized into a different kW range than in the database. The difference is magnified when this situation occurs at higher kW ranges; because there is less unit volume, each unit makes up a greater percentage of the total number of units.
- It is possible there are generator ends accounted for in the EGSA Survey (generators using prime movers other than reciprocating engine) that are not accounted for in the PSR database. This will contribute to the EGSA coverage being larger than actual.

Using industry contacts and public information, the sub-committee appropriately sized some of the more prominent non-reporting manufacturers and determined that they account for over 35% of the market above 10 kW; when considering all power ranges, the sub-committee found non-reporting participating manufacturers account for as much as 10% of the market [by unit volume].

Since these non-reporters compete in some key kW ranges and have declined to participate in the EGSA Survey, their absence leaves a potential gap in the Survey results. Furthermore, we know that this gap between total assumed North American genset production (Table 1) and current EGSA Reported Shipments to North America (Table 2) is due to more than one participant's absence from the Survey.

The results displayed in Table 5 really confirm what many have already suspected and helps answer the Marketing Trends

Table 4: Estimated Total Shipments	EGSA kW Range	2006	2007	2008
	<10.0 kW	3.7%	3.8%	3.5%
	10.1 to 15.0 kW	53.3%	50.1%	50.7%
	15.1 to 30.0 kW	33.8%	33.5%	32.9%
	30.1 to 50.0 kW	42.4%	42.1%	40.6%
	50.1 to 150.0 kW	19.4%	19.3%	19.3%
	150.1 to 250.0 kW	17.0%	16.9%	16.8%
	250.1 to 500.0 kW	19.3%	19.1%	19.0%
	500.1 to 750.0 kW	0.0%	0.0%	0.0%
	750.1 to 1000.0 kW	0.0%	0.0%	0.0%
	1000.1 to 2000.0 kW	0.0%	0.0%	0.0%
	2000.1 to 6000.0 kW	0.0%	0.0%	0.0%
	<b>Total Captured*</b>	<b>36.7%</b>	<b>35.6%</b>	<b>35.3%</b>
	<b>Total Captured Overall**</b>	<b>10.1%</b>	<b>10.3%</b>	<b>10.4%</b>
*In Power Ranges >10kW **All power ranges				

Table 4: Estimated total shipments as a percentage of total market by major non-reporters.

**Table 5: Market Co-Coverage**

EGSA kW Range	2006	2007	2008
<10.0 kW	25.9%	24.7%	22.4%
10.1 to 15.0 kW	71.1%	72.8%	82.6%
15.1 to 30.0 kW	188.5%	166.8%	143.7%
30.1 to 50.0 kW	99.9%	89.2%	89.4%
50.1 to 150.0 kW	111.1%	92.5%	94.8%
150.1 to 250.0 kW	86.6%	86.2%	95.2%
250.1 to 500.0 kW	98.0%	95.3%	108.6%
500.1 to 750.0 kW	191.7%	166.0%	146.2%
750.1 to 1000.0 kW	119.4%	98.7%	181.9%
1000.1 to 2000.0 kW	68.5%	77.8%	75.0%
2000.1 to 6000.0 kW	501.2%	619.5%	715.5%
<b>Total Captured*</b>	<b>104.3%</b>	<b>96.0%</b>	<b>98.9%</b>
<b>Total Captured Overall**</b>	<b>41.2%</b>	<b>39.2%</b>	<b>39.1%</b>

\*In Power Ranges >10kW    \*\*All power ranges

Table 5. Percentage coverage of total market if identified non-reporters were to participate in the EGSA Survey

Committee's question. When considering the market above 10 kW, a limited number of manufacturers tend to be the missing pieces of the puzzle. If all manufacturers participated in the EGSA Survey, total coverage would rise to nearly 100% when considering generators greater than 10 kW. What can we do to improve this situation? Continue to encourage more manufacturers to participate!

These questions—and their answers—will be up for discussion at our next EGSA Marketing Trends Committee meeting in Colorado Springs. Join us!

#### About the Author

Joe Zirnhelt is a senior consultant with Power Systems Research and a member of the EGSA Market Trends Committee. Contact him at [jjirnhelt@powersys.com](mailto:jjirnhelt@powersys.com)

### About the Electrical Generating Systems Association Quarterly Generator Shipment Survey

#### Scope of Products Covered

The EGSA Quarterly Generator Shipment Survey provides a statistical snapshot of the number of Alternating Current (AC) electrical generators manufactured throughout the world. The product scope excludes generators for welders and automotive applications.

#### What Participants Report *(unit of measure)*

Survey participants are asked to report the number of generators (NOT generator sets) they manufactured or imported that are used for engine-driven or power take-off applications. In cases where one manufacturer winds its own generators for use on generator sets and generator production data is not easily obtained, the reported number of generator set shipments is used. All units manufactured and shipped, regardless of type or location of customer, are included. This includes units shipped to other divisions of the same company for its own use as well as shipments to other manufacturers for resale. Generators produced and incorporated into other products at the same plant (e.g. generator sets) are reported as shipments of generators. Units purchased for resale are not included except imports from outside North America.

#### Survey Terms

**PTO Generator**—2-bearing generators incorporating a speed increaser.

**Exports from North America**—generators produced anywhere within North America and exported out of the continent.

**Imports to North America**—generators produced anywhere outside North America and then sold within North America.

**KW Rating**—The rating at 130°C temperature rise above 40°C ambient @ 60 Hz.

#### Product Classifications

Products are classed as PTO and non-PTO generators.

#### Geographic Regions

**North America**—U.S., Canada, and Mexico.

**Central & South America**—all countries within South America and the Caribbean.

**Europe**—all countries within Europe.

**Australia**—Australia and New Zealand.

**Asia and Pacific Rim**—all countries within Asia, Russia, Japan, the Philippines, Indonesia, Malaysia and New Guinea.

**Middle East**—Turkey, Syria, Lebanon, Israel, Jordan, Iran, Iraq, Kuwait, UAE, Bahrain, Qatar, Saudi Arabia, Oman, Yemen, South Yemen, and Egypt.

**Africa**—all countries within Africa, including Madagascar but excluding Egypt.

#### Current Survey Participants

Caterpillar, Inc.

Cummins/Onan Corporation

Kato Engineering Co.

Kohler Co.

Magil Corp/Mecc Alte America

Marathon Electric Mfg. Corp.

National Oil Company

Newage Limited

Leroy-Somer/USEM Div. Of Emerson

# EGSA 2009 Market "Pulse" Analysis

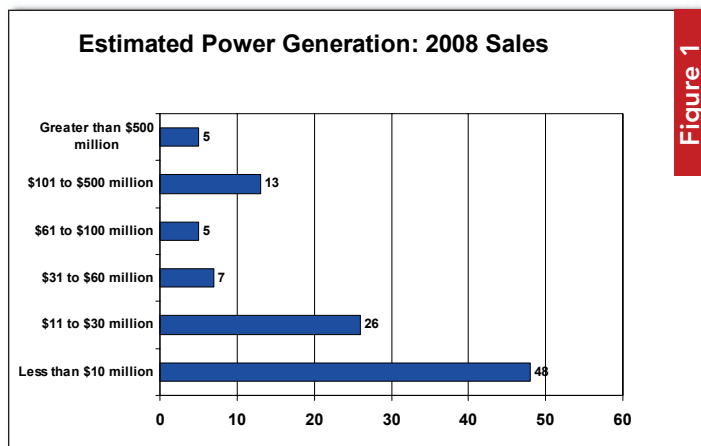
By John Hoeft, Advanced Marketing & Technology Insight

The EGSA Marketing Trends Committee (MTC) recognizes the need to help produce additional value for its members. The power generation market continues to be highly cyclical; OEMs and their distribution channels continue to search for leading market indicators that could help indicate increases or decreases in sales. This semi-annual survey aims to give EGSA members the "pulse" of the current state of the on-site power industry.

An internet-based survey of 1,368 members (including historical total) including OEMs, distributors, manufacturers' reps, consultants, and engineers was initiated in June, 2009.

Current market decreases reflect a market concerned with weak global economic growth. The slowdown has some engine and genset OEMs implementing changes to survive this down-cycle, including cutting staff, temporarily closing plants and furloughing employees. The estimated 2009 EGSA power generation market could be down as much as 30% when compared to 2008.

Nearly half of the survey respondents were companies with annual sales less than \$10 million dollars. Segmentation of these categories showed good distribution of data (Figure 1).

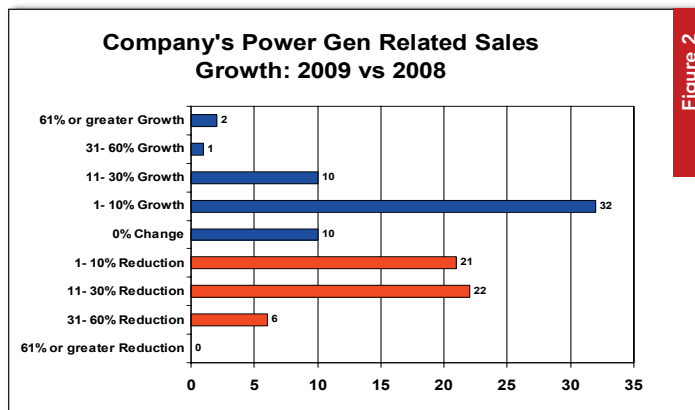


Reporting companies mostly referenced 1% to 10% growth. However, many larger companies are forecasting an 11% to 60% reduction in sales (Figure 2).

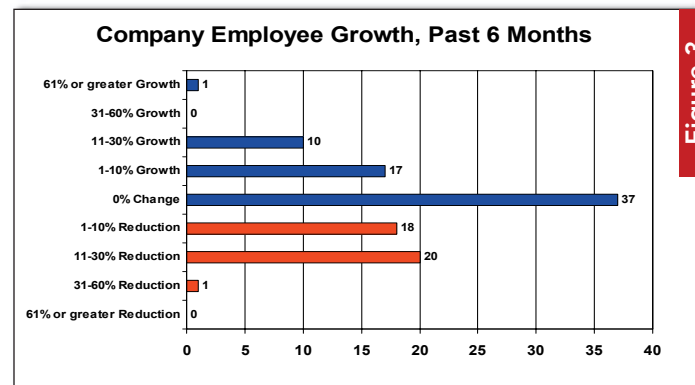
Overall, 37 EGSA members (35.2%) reported no staff changes. In segmenting the data by company sales, the larger companies (>\$100M) have all either reduced or maintained headcount equally. In fact, 33.3% reduced headcount by 11% to 30%, 33.3% reduced by 1% to 10%, and for the final 33.3% headcount remained unchanged. The highest reported growth (of 61% or greater) was in a medium-size company within a niche market (Figure 3).

In regards to the changes in capacity (i.e. floor space, assembly, machinery changes), most companies have not changed their status. Five (5) companies in the less than \$30M size range made a significant investment in their capacity. In regards to future growth, the data did show some alarming management issues for a couple of companies. In one case, the company's sales dropped 31% to 60% in 2009 and their capacity was reduced a corresponding 31% to 60% in the past six (6) months. However, they expected an 11% to 30% growth in the next 12 months (Figure 4).

In reviewing which companies were the "best suppliers," many



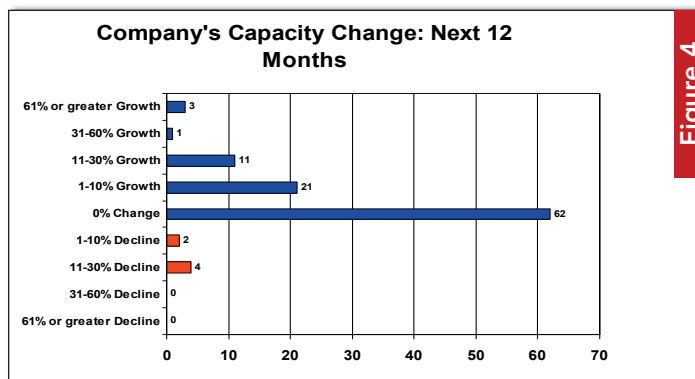
respondents chose their main genset OEM due to brand allegiance. Others chose their respective OEM because they truly believed there was a competitive advantage versus the competition. Respondents pointed to a number of competitive advantages, but many responses centered on specific product features and benefits the OEMs make available, thus placing them a step above the competition.



In this survey, the answers to the subjective questions ranged considerably. The noteworthy answers were responses in the category of "competitors" (5%) and "respected company" (11%) of the 105 respondents. The "sub-supplier" and their reasons are indicative of how and why customers keep buying their products (Figures 5 and 6).

Although product was usually the strongest competitive differentiator, technology is advancing to a point where it would eventually seem difficult to articulate the differences (Figure 6).

The respondents from the EGSA survey represented a wide





cross section of the market. Survey responses displayed a good distribution of the data. Many of the business-related answers were "unchanged" (neutral) type of responses.

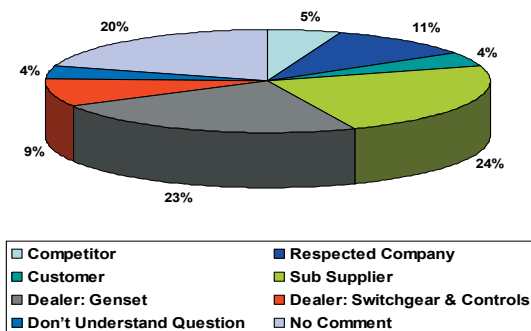
Following are the main conclusions from the survey:

- As expected, sales are down in most cases. The impact of the weakened power gen market seems significant with over 54% of respondents indicating either no change or negative sales growth from 2008 to 2009.
- The major engine and genset manufacturers have collectively laid-off thousands of assemblers and office personnel. They have recently implemented furloughs and rolling layoffs to conserve cash flow and to not layoff any additional key company talent.
- Based on indications from declining employee growth, changes in sales from 2008 to 2009 and capacity changes over the past year, it appears that the power generation market is down as much as 30%.
- Survey respondents do, however, seem relatively optimistic that the market for power generation will rebound somewhat in the coming year. This conclusion is supported by the fact that over 41% of respondents expect their employee workforce to increase during the next year and 34.3% are planning for capacity increases.

#### About the Author

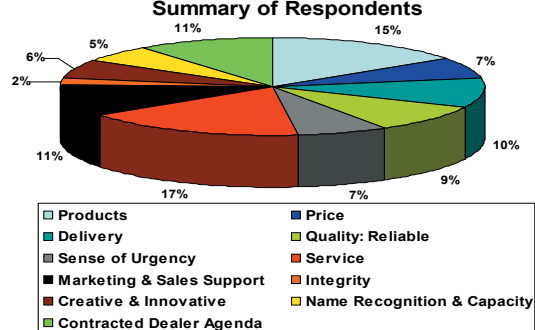
John Hoeft is Principal of Advanced Marketing & Technology Insight and a member of the EGSA Market Trends Committee. Contact him at [john@adv-mkti.com](mailto:john@adv-mkti.com) ■

**Best Power Gen Company:  
Summary of Respondents**



**Figure 5**

**Reasons "Why" for Best Power Gen Company:  
Summary of Respondents**



**Figure 6**

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# Distributed Embedded Power Generation

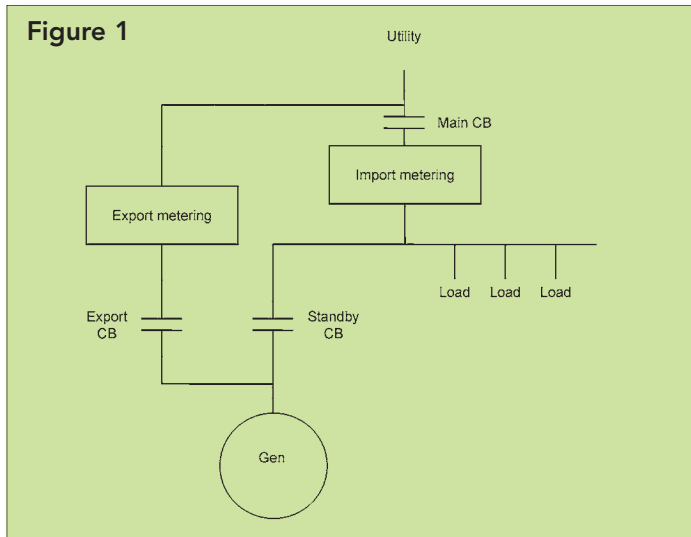
By Steve Evans, CEO and General Manager DEIF North America

Standby generators can be turned into revenue generators. Utilities are faced with many challenges when it comes to adding generation. Starting with the obvious construction costs, add the NIMBY (Not In My Back Yard) factor, transmission costs, maintenance costs, and environmental compliance and you can imagine the headaches of building new power generation plants.

Cole Cacciavillani with GenSet Resource Management within CF Industrial Group, has developed a program to bring together owners of standby generators and the local utility in order to solve many of these challenges at one time. He has worked with Ontario Hydro (Hydro One) under the auspices of the Independent Electrical System Operator (IESO) program to pay owners of existing generators for their units *just to be ready and dispatchable* by the IESO. When they are called on to run, they are paid even more!

"Utilities can't get power to where they need it," says Cole, "our [generators] export power in times of constraint" to the local grid, "keeping the power local. This is embedded and distributed generation." This constraint could be demand based or outage based. To the utility, "embedded in the system" can mean reduced transmission losses and a delay or even cancellation of plans to build new power generation stations. Having several smaller generators around the system makes it easier and more efficient to add power where it is needed and save transmission losses, which can add up to be several percentage points.

Figure 1

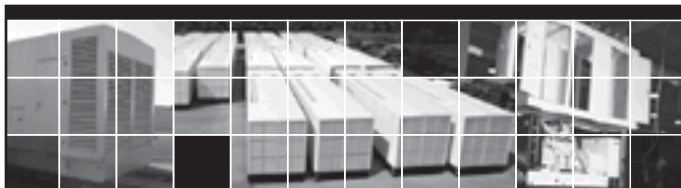


There are several key components to this system, including an export breaker, export metering, and the dispatch communication link, normally the Internet. The power connection is not dependent upon the main breaker or other components in the user's switchgear: they have their own export breaker to tie the

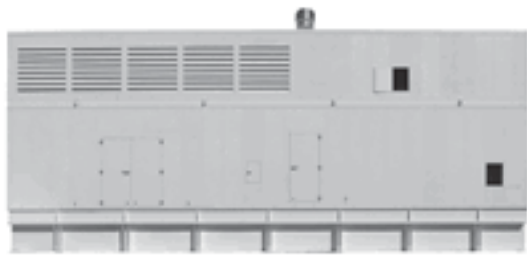
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generator directly into the grid ahead of the consumer's meter, not inside the user's system like most distributed generation. The normal standby breaker is there for loss of utility, just like a typical standby system. Thus this system does not affect current power consumption contracts or existing metering (see Figure 1).

GenSet Resource Management does all the paperwork and bundles 8 or 10 or more generators into a block large enough that the utility can count them into their available kW numbers, eliminating the need to build new power plants. The generators need to be on-line within 10 minutes to meet the contractual obligations. Utilizing high-reliability servers located at remote data centers, the IESO dispatches the generators directly in blocks of power, typically 10MW or more. The generators are dispatched via the Internet directly to the DEIF AGC controller in the owner's switchgear. Metering data and generator status are available on the Internet, too, for monitoring and maintenance needs. By bundling more generators than needed for the load, there are extra sets in case one

does not start. A commonly used configuration example is 14 gensets dispatched for a 10MW block.

Starting at about 500kW and now targeting 1 MW generators, Cole says, "owners typically get about \$40,000 (CDN) a year" just to have them available to be dispatched by the IESO. More income is possible as run times increase. Return on investment times are typically 2.5-3.5 years, less if factored into a new installation. But the advantages to the owners are beyond just financial. The maintenance and fuel costs are included in the contract, thus no out of pocket expenditures for costly, sometimes unexpected, maintenance and easier budget planning.

The generators run under load several times a year and the fuel is kept fresh, so owners know their emergency power systems are tested and will work if they are needed for extended utility outages. When it comes time to periodically test the generator as required by regulations, the power can be returned to the grid instead of being dumped into load banks with the associated environmental benefits.

The drawback is the wear and tear on the engine and generator, but with run times averaging less than 100 hours per year and a system life expectancy of 10,000 to 30,000 hours, the genset will still probably outlast the installation. With better and more routine maintenance, engine exercising, and consistently fresh, good fuel, engine life expectancies are predicted to be better than average.

With careful planning, owners of standby gensets can recover their capital investment in an emergency power system and take comfort in knowing the system will work when needed, and the utilities can avoid or delay expensive new power plants—all with positive environmental impacts.

#### About the Author

Steve Evans is CEO/General Manager of DEIF's North American operation based in Fort Collins, CO. He has been involved in the transmission, protection, generation, distribution, conversion, and control of electrical power for over 28 years. Contact him at [see@deif.com](mailto:see@deif.com). For information about CF Groups, visit [www.cfgroups.com](http://www.cfgroups.com) ■

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# Solar Taurus 60



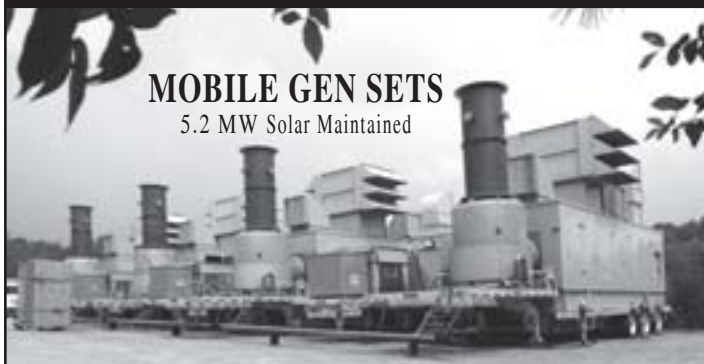
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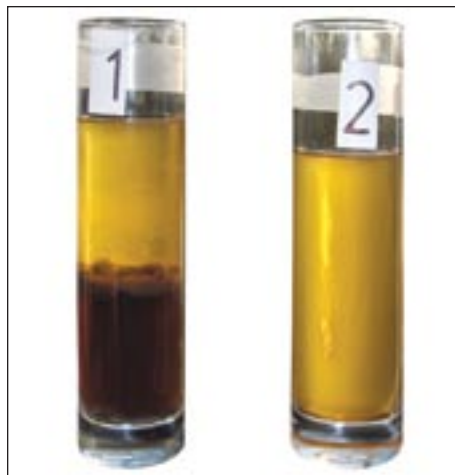


# Peace of Mind Comes with a Price Tag

By Paul Wohlrab, *Separ Filters of the Americas*

Every diesel standby power generator, every diesel storage tank, every belly tank in a remote location has the potential for one thing in common: eroded performance due to inadequate diesel fuel maintenance. If you're the one guy in a hundred who never has to address the condition of his fuel, congratulations. For the rest of us, the ramifications can be steep. It only takes six short months for diesel fuel to become jeopardized, thereby hindering generator performance and peace of mind when you need it most.

This is not your father's diesel fuel we're talking about. The new generation of diesel mandated by the EPA may be a good thing for the environment, but most end users remain uninformed, unaware, and unconcerned how the recent changes in the fuel's makeup will directly affect the operation of their machinery. The ongoing misconception that diesel fuel is "good for life" has been widely circulated and is universally false.



Contaminated (1) and polished (2) fuel.

You may be the proud owner of a tank full of problems right now. Some of the factors that accelerate aging of diesel include contact with zinc, copper, or metal alloys that contain these components, which may be found in dust particles. Water, of course, which allows the growth of fungus or bacteria, can enter your tank in a number of ways, with the most popular being via the fuel delivery process, and/or condensation. Water is also an unwanted byproduct of some of these infections, thus creating a cycle where more contaminate can grow. Microbial growth, commonly misidentified

as algae, does not survive without water. So the main item to eliminate from your tank is water.

Condensation is present in most tanks simply because the tank "breathes" moist air as the temperature changes throughout the day, and cools during the night. Even if the tank is nearly full, a small amount of water with the right contaminants will start the process of infectious growth.

Most everyone that owns power generation equipment purchased the system for peace of mind and security. While each case is different, ask a small business owner how much he will lose if he cannot have power for a week. Many owners and managers have taken the time to understand at least the basics of their equipment operation, and an overall view of required and suggested maintenance. Most everyone who owns a diesel engine has read something about fuel, and some have studied in depth how newer common rail engines require fuel to be held to a more stringent specification. Yet NOT everyone maintains their fuel, and some use the following justification to explain their position:

***"The generator runs for the half hour maintenance check each month with no problems."***

That's good news—provided your emergency power is only called upon for 30 minute needs. When was the last time you ran it for 12 hours of continuous loaded duty, like a real power outage might demand? Did you refuel and run it another 12 hours or more? How old is the fuel you own today?

***"I just put fuel in two years ago and it runs fine—and I have plenty of fuel filter elements if the tank is contaminated."***

Again, this is good thinking to a point. Do you really have plenty of elements if you are shutting down and changing clogged elements every 20 minutes? If your power is off for a few days, this becomes an issue. Is there manpower allocated to changing all those elements?

Think of the flow of the fuel from your tank to the generator—it should pass through a diesel/water separator prior to reaching the two (in most cases) engine mounted filtration units for optimum protection. This allows the particulate and water to be removed in a decreasing mi-



Fuel contamination from the tank bottom.

cron range—typically 30 microns on the separator, then down to 10 then down to 2 is a popular progression. Having this configuration in place eliminates the issues associated with taking on a load of bad fuel during or immediately following an extended outage, since the first stage will remove the water and larger particles without the need to replace the engine filter elements.

***"If I have a problem, I'll just call the guy."***

OK, you have a guy to call, that part is commendable. If "your guy" is good, he has five to seven hundred other customers who may be calling during a prolonged power outage, so what number do you think you will be on his list of priorities? You may be fortunate enough to be in the top 50—or maybe not. Most repair facilities can respond quickly, but a tank full of bad diesel may not be easily resolved in an emergency like a major storm where replacement fuel supplies and complex repairs may become an issue.

***"If my injectors blow out from bad fuel, the warranty will cover them."***

It might be best to review your owner's manual. Many manufacturers will not cover bad fuel issues, and making repairs such as these in the middle of an area-wide emergency outage or other long-term situation could prove difficult. Consider that replacement parts typically need to be delivered, and delivery services may be curtailed as well, so your simple fuel issue may become something more difficult to resolve under these conditions. Additionally, the costs for major repairs seem to be more painful when they could have been simply avoided by some basic fuel maintenance steps. Correlate this reality with your original reason for purchasing the safety and security of a power generation system, and the issue should be clear.

***"In this economy, maintenance is not a priority."***

While this may not be an option for some critical needs facilities, many managers push maintenance down the list, right up to the point that the power goes out, and the generator only runs for a little while, and shuts down.

Again, if you are the guy to which none of the above apply....wonderful. So let's make sure you're really on the right track. Here are several ways to ensure your diesel engine will perform as expected when called upon:

In addition to normal start-up preventive maintenance of your generator, have your diesel fuel inspected/tested on a regular basis (for some applications this is required, not suggested). For instance, in critical need applications, NFPA 110 guidelines must be met annually. Your generator service organization will offer a fuel/tank testing service, or go on-line and find one in your area. If your fuel has been stored for several years with no maintenance, your tank may need to be cleaned. Once the fuel and tank are back to spec, there are several ways to keep it up to date. The key here is to do something, as time is not on your side in any case. If the system is brand new, or better still, just about to be installed, this is a great time to get your plan in place as there probably will be little or no corrective action needed.

Plan to have your tank cleaned and fuel polished with regularity, just like inspecting and replacing filter elements, belts or

hoses. Some companies offer annual plans, some approach the task as an individual or "as needed" item—either way, get a schedule in place to ensure reliability. Additives are a popular alternative to physically polishing diesel fuel, and in some cases are a good supplement to the process. Ultimately, when the additive does its task well, the microbes are defeated—but they still sink to the bottom of the tank and may form sludge unless dealt with in a polishing process.

Ensure that your new shipment of diesel fuel is optimum prior to refilling your tank. This is only practical or even possible from some suppliers, and during an emergency, may not be practical from anyone. Getting a tank full of contamination can create an ongoing issue, so having a dependable, reliable, quality fuel supply source is imperative. One simple task is to perform a "clear and bright" visual inspection of the fuel before pumping it into your tank. Cloudy or sediment filled fuel should raise questions and may be cause to reject a shipment.

Be sure to use bio diesel compatible filtration components as you may not even be aware that you are using a bio diesel blend, which may in turn damage filtration systems that are not bio diesel compatible. There are plenty of articles about bio fuel in circulation to help identify what is being pumped into your tank. Be careful to comply with engine manufacturer specifications which vary from company to company. Most engine manufacturers allow up to 5% bio diesel blends without issue. Note that

bio diesel may have a shorter life than standard diesel, depending on the composition. This further shortens the overall life of the diesel that may be stored in your tank.

In many situations, an emerging option is to install a permanently mounted fuel polishing system and primary diesel/water separator to keep fuel ready for use. This process is typically handled by your generator sales or maintenance company and can offer substantial savings vs. emergency repairs or a generator failure due to fuel problems. Once installed, scheduled generator run times can now include fuel maintenance, creating a more reliable unit. Depending on tank configuration, age of unit, quality of original fuel, etc, a permanently mounted fuel polisher can dramatically lower your cost exposure to fuel related problems, while dramatically improving your system reliability.

Take action. In an economically challenged operating environment, this is an easy obstacle to overlook. But, the downside could be disastrous. Ensure peace of mind and act now to safeguard your emergency operating environment for when you need it most. Now is a great time to solve this dilemma. The price tag is dependent on any number of issues: size of your tank, amount of contamination, difficulty of access, quality of the ongoing service organization. However, not acting may be easier to calculate—as soon as the power comes back on for your lights and calculator. ■

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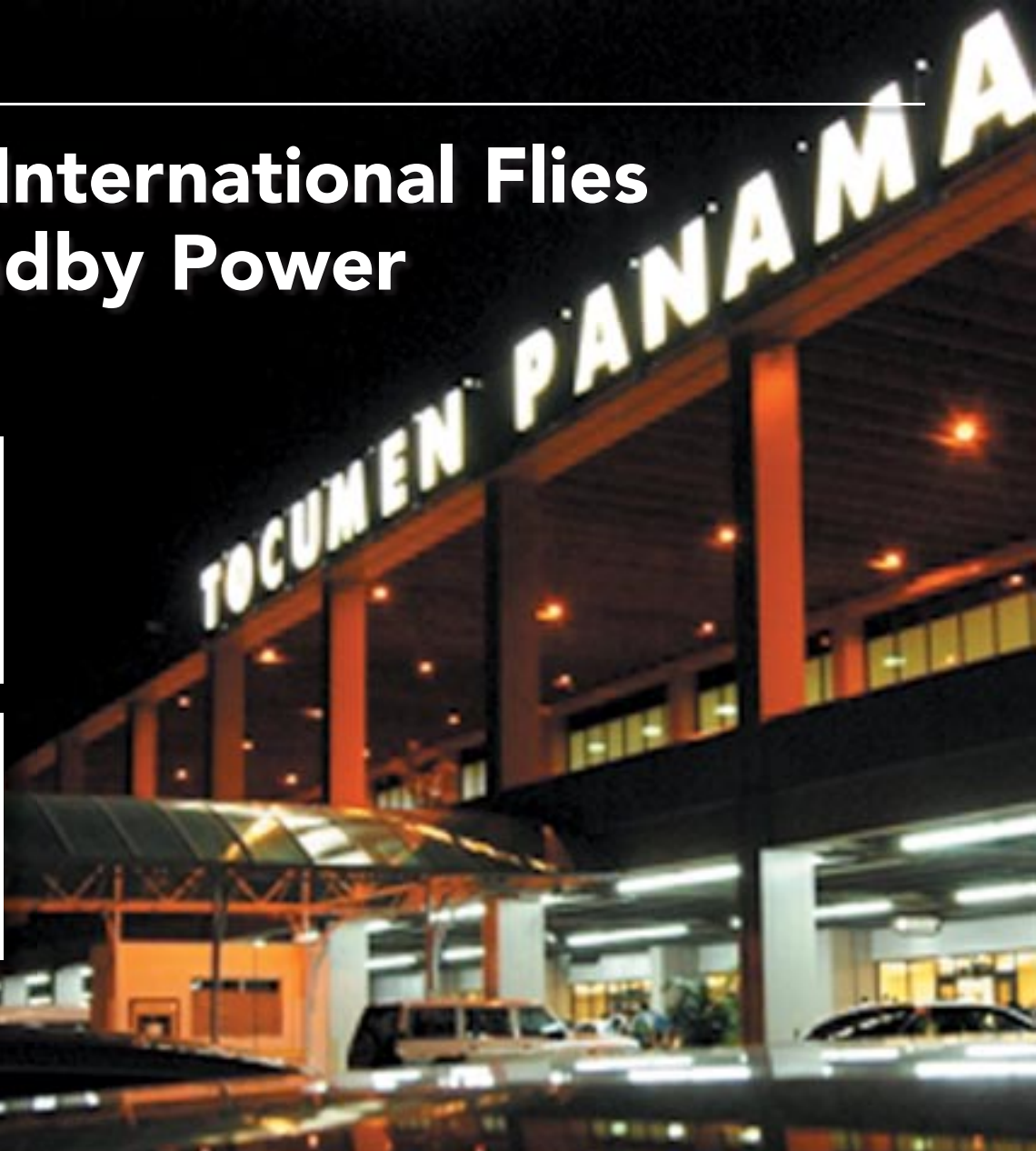


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# Tocumen International Flies With Standby Power



Panama's Tocumen Airport—one of Central America's major international transportation hubs—serves both passengers and air cargo traffic moving between North and South America. A recently completed three-year US \$85 million modernization program has positioned Tocumen as one of the most modern and technologically advanced airports in Central and South America. Thanks to new equipment and an improved infrastructure, Tocumen S.A. is able to meet the expectations of the international community for both passengers and cargo services.

A key component of Tocumen's modernization was the installation of a highly reliable standby power system to keep the airport running—and to keep people and goods moving—in the event of a utility outage.

To meet this need Enercon Engineering was asked to custom design and manufacture a switchgear and control systems for four Caterpillar 3516 engine-generator sets each rated at 2,000 kW/2,500 KVA, 3 phase, 60 hertz, 13.8 kv, output 104.6 amps. The total site capacity is 8 megawatts/10 MVA, 418.4 amps.

The generator sets—mounted onto custom-built skid bases with 1,000 gallon fuel tanks—operate as standby power and are also paralleled with the local utility company for load control and peak shaving operations.

Thus far, the system has been activated twice due to utility power failure. In each case, the system performed as expected, and airport personnel have been very pleased with the reliable operation of the system when emergency standby power is needed. ■







# Application for Membership

## ELECTRICAL GENERATING SYSTEMS ASSOCIATION

1650 South Dixie Highway, Suite 400, Boca Raton, FL 33432 • 561-750-5575 • FAX 561-395-8557  
E-Mail: [e-mail@EGSA.org](mailto:e-mail@EGSA.org) • World Wide Web: [www.EGSA.org](http://www.EGSA.org)

*Under the leadership of its Board of Directors and operating through its various committees and staff, EGSA strives to educate, provide networking opportunities and share relevant knowledge and trends with industry professionals including manufacturers, distributor/dealers, engineers, manufacturer representatives, contractor/integrators and others serving On-Site Power consumers.*

### 1. Contact Information

*Please type or print all information in upper and lower case (NOT ALL CAPS!)*

Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State/Province \_\_\_\_\_  
Zip/Postal Code \_\_\_\_\_ Country \_\_\_\_\_  
Phone \_\_\_\_\_ FAX \_\_\_\_\_  
Official Representative \_\_\_\_\_ Title \_\_\_\_\_  
Representative's E-Mail \_\_\_\_\_ Company's Web Address \_\_\_\_\_  
How did you hear about EGSA? ☐ Web site ☐ Powerline magazine ☐ Colleague ☐ POWER-GEN ☐ Other \_\_\_\_\_  
Why are you joining EGSA? ☐ Certification Program ☐ CEU Program ☐ Power Schools ☐ Buying Guide Listing ☐ Other \_\_\_\_\_

### 2. Member Classification

*Read the Membership classifications below and check the box that describes your firm's classification.*

#### I. FULL MEMBERSHIP

- ☐ **MF Manufacturer Membership**  
Any individual, sole proprietor, partnership or corporation seeking membership must apply for a Full Membership as a manufacturer if they meet one or more of the following criteria:
1. They manufacture prime movers for power generation.
  2. They manufacture generators or other power conversion devices producing electricity.
  3. They manufacture switchgear or electrical control devices.
  4. They manufacture or assemble generator sets, UPS systems, solar power, hydropower, geothermal, or any other power production or conversion system including related components or accessories for national or regional distribution.
  5. They are a wholly owned subsidiary of a firm that qualifies under rules one through four.
- ☐ **DD Distributor/Dealer Membership**  
Any individual, sole proprietor, partnership or corporation actively engaged as a distributor or dealer for products listed under Manufacturer Membership may apply for Full Membership as a Distributor/Dealer. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.
- ☐ **CI Contractor/Integrator Membership**  
Any individual, sole proprietor, partnership or corporation actively engaged as a Contractor or Equipment Integrator of products listed under Manufacturer Membership, not bound by brand, geographic territory or contractually obligated as a Distributor/Dealer of a specific product. These firms typically purchase products from a Distributor/Dealer, Manufacturer or Retailer, adding value through installation, product knowledge, relationships, unique services, etc., and then re-sell the resulting product to an end-user.
- ☐ **MR Manufacturer's Representative Membership**  
Any individual, sole proprietor, partnership or corporation actively engaged in the representation of products listed under Manufacturer Membership may apply for Full Membership as a Manufacturer's Representative. If an organization qualifies under Manufacturer Membership, it is not qualified under this section.
- ☐ **EM Energy Management Company Membership**  
Any individual, sole proprietor, partnership or corporation engaged in energy management, including Energy Service Companies (ESCOs), Independent Power Producers (IPPs), Integrators, Aggregators, and other similar enterprises may apply for Full Membership as an Energy Management Company.
- ☐ **Associate Full Membership (mark appropriate category at right)**  
Any individual, sole proprietor, academic institution, student, partnership or corporation meeting the requirements of Associate Regular Membership may apply for Full Membership at their option to enjoy the privileges of Full Membership, including the rights to vote and to serve on EGSA's Board of Directors. Initiation fees and annual dues will be assessed at the existing non-manufacturer Full Member rates.

#### II. ASSOCIATE REGULAR MEMBERSHIP

- ☐ **AA Trade Publication Membership**  
Any trade publication dealing with the electrical generating systems industry or its suppliers may apply for Associate Membership—Trade Publications.
- ☐ **AB Trade Association Membership**  
Any trade association made up of individual or company members sharing a common interest in the electrical generating systems industry may apply for Associate Membership—Allied Associations.
- ☐ **AC Engineer Membership**  
Any consulting or specifying engineer may apply for Associate Membership—Engineer. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.
- ☐ **AD End-User Membership**  
Any individual employee of a company who owns or operates electrical generating equipment and/or related switchgear or components, whose responsibility to his employer includes planning, design, installation, supervision, or service of such equipment may apply for Associate Membership—User. Membership may either be held in the employer's name or individual's name under this classification. Individuals whose employer qualify as a Full Member, as described in the Full Membership section, do not qualify for this category.
- ☐ **AE Service Membership**  
Any individual, organization or academic institution that offers services such as research, testing or repair to the electrical generating systems industry may apply for Associate Membership—Services. Membership may either be held in the individual's name or the organization's name under this classification. Individual companies whose employer or parent organization qualifies as a Full Member, as described in the Full Membership section, do not qualify for this category.
- ☐ **AG Educational Institution Membership**  
Any postsecondary vocational-technical school or college offering on-site power generation-related instruction may apply for Associate Membership—Education Institution.
- ☐ **AR Retiree Membership**  
Any individual who retires from a member company may apply for Associate Membership—Retired. This classification does not apply to any individual who is employed more than 20 hours per week.
- ☐ **AF Student Membership**  
Any individual currently enrolled at an academic institution may apply for Associate Membership—Student.

## Application for Membership – page 2

### Dues Schedule (Use for Section 3)

	Annual Dues	Initiation Fee	TOTAL
Manufacturer.....	\$825	\$200	\$1025
Distributor/Dealer.....	\$285	\$100	\$385
Contractor/Integrator.....	\$285	\$100	\$385
Manufacturer's Representative.....	\$285	\$100	\$385
Full Associate Member.....	\$285	\$100	\$385
Energy Management Company.....	\$200	\$100	\$300
Regular Associate Member.....	\$200	\$100	\$300
Retiree Member.....	Complimentary	\$0	\$0
Student Member.....	Complimentary	\$0	\$0

**NOTE:** A FULL 12-MONTH DUES PAYMENT MUST BE RECEIVED WITH THIS APPLICATION. The Association's Membership Year is January 1 through December 31. Dues payments that extend beyond the first Membership Year will be applied to the second year's dues.

**FULL PAYMENT MUST BE RECEIVED WITH APPLICATION.**

### 3. Membership Dues (Please fill in the appropriate TOTAL amount from the above dues schedule.)

Membership Dues \$ \_\_\_\_\_  
Membership Plaque (optional)\*\* \$ 39.95\*\*  
On-Site Power Reference Book (optional)\*\* \$ 125.00\*\*  
**Florida Residents:** Add 6.5% Sales Tax to \*\* items \$ \_\_\_\_\_  
Continental US Residents add \$5 shipping/handling to \*\* items. \$ \_\_\_\_\_  
Non Continental US Residents should call EGSA  
Headquarters for shipping charges for \*\* items. **TOTAL** \$ \_\_\_\_\_

### 4. Payment Method (Payable in US\$ drawn on U.S. bank, U.S. Money Order, or American Express)

☐ Check # \_\_\_\_\_ Amount Due \$ \_\_\_\_\_  
☐ Money Order  
☐ Mastercard ☐ Visa ☐ American Express  
Card # \_\_\_\_\_ Exp. Date \_\_\_\_\_  
Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_

### 5. Products/Services Please describe the nature of your business (50 words or less, NOT ALL CAPS). If you are a Manufacturer's Representative or Distributor/Dealer, please indicate which manufacturers you represent and/or distribute for; if you are a student, please provide the name and location of your school, your major and your anticipated graduation date:

Do you buy AND sell equipment? ☐ Yes ☐ No

Do you manufacture packaged equipment? ☐ Yes ☐ No

#### Available Codes:

01 ---Batteries/Battery Chargers  
02 ---Control/Annunciator Systems  
29 ---Education  
30 ---Emission Control Equipment  
04 ---Enclosures, Generator Set  
05 ---Engines, Diesel or Gas  
06 ---Engines, Gas Turbine  
07 ---Engine Starters/Starting Aids  
08 ---Filters, Lube Oil, Fuel or Air  
28 ---Fuel Cells  
03 ---Fuel Tanks and Fuel Storage Systems

09 ---Generator Laminations  
10 ---Generator Sets  
11 ---Generators/Alternators  
12 ---Governors  
13 ---Heat Recovery Systems  
14 ---Instruments and controls, including meters, gauges, relays, contactors, or switches  
15 ---Load Banks  
16 ---Motor Generator Sets  
17 ---Radiator/Heat Exchangers  
18 ---Relays, Protective or Synchronizing

19 ---Silencers/Exhaust Systems/Noise Abatement  
20 ---Solenoids  
21 ---Switchgear and Transfer Switches (Automatic or Manual), Bypass Isolation Switches, and/or Switchgear Panels  
22 ---Trailers, Generator Set  
23 ---Transformers  
24 ---Uninterruptible Power Supplies  
25 ---Vibration Isolators  
26 ---Voltage Regulators  
27 ---Wiring Devices or Receptacles

#### Enter codes here:

**Products sold:** \_\_\_\_\_

**Products rented:** \_\_\_\_\_

**Products serviced:** \_\_\_\_\_

### 6. Sponsor(s): A "Sponsor" is an EGSA Member who interested you in filling out this application. It is not mandatory that you have a sponsor for the Board to act favorably on this application; however, if a Member recommended that you consider membership, we request that individual's name and company name for our records.

Sponsor Name \_\_\_\_\_ Company Name \_\_\_\_\_

### 7. Official Representative's Authorization

Signature \_\_\_\_\_ Date \_\_\_\_\_

## 2009 EGSA On-Site Power Pavilion to Play Las Vegas

The On-Site Power Industry is betting the economy will soon recover from its historic tumble as it gears up for the biggest ticket of the season: POWER-GEN International 2009, to be held December 8-10 at the Las Vegas Convention Center. The event is expected to draw more than 17,000 power professionals from 76 countries and 1,200 exhibiting companies. The Electrical Generating Systems Association (EGSA) will again feature its highly successful On-Site Power Pavilion, a "show within a show" that offers a focus on On-Site Power Generation that is unequaled in the industry.

With close to one million square feet of exhibit space, POWER-GEN International maintains its position as the biggest—and most important—of power industry events. By extension, that makes the EGSA On-Site Power Pavilion—located within the heart of the POWER-GEN show—the most important On-Site Power exhibition of the year as well.

A limited amount of exhibit space within the EGSA Pavilion is still available. For more information, contact Liz Bustamante at [L.Bustamante@EGSA.org](mailto:L.Bustamante@EGSA.org)

## China to Impact Cost of Environmental, Energy Investments

Market research firm The McIlvaine Company has announced that forecasts and demand analyses conducted in each of its market reports on water, air and energy indicate that China will have a major impact on future consumable and equipment pricing.

The short-term cost of catalysts, for example, is expected to increase because Chinese demand will exceed present world capacity. However, says McIlvaine, new Chinese suppliers will enter the U.S. market and thereby decrease price in the longer term.

The U.S. has averaged 10,000 megawatts (MW) per year of new SCR NOx control systems since 1991. The total world outside China has managed to install 300,000 MW of these systems since 1980. China plans to install 400,000 MW by 2020. In just a few years, they have installed more MW of SCR than any country other than the U.S. Plus, by 2020 the Chinese catalyst need will be 25 percent greater than the present world manufacturing capacity.

In 40 years, the world outside China has managed to install 382,000 MW of flue gas desulfurization scrubbers. In less than a decade China has installed 326,000 MW. By 2020 China will be operating 658,000 MW of FGD Systems and thus require twice the limestone used in plants outside China today. It will need to buy more slurry pumps, nozzles, and agitators than are used in FGD systems outside China today.

The installation of wind turbines in China is quickly exceeding the most optimistic predictions. Nearly 10,000 MWs of new capacity is being installed every year. Since the typical turbine installed in China is under 1 MW, this means over 10,000 gearboxes, wind turbine blades, etc. will be needed each year. In just a few short years China has not only planned and installed many large wind farms but they have also developed a large China-based industry. It is expected that they will shortly become an exporter of wind turbines and components.

Within two years McIlvaine predicts that China's installed capacity will exceed any other country in the world. This high level of activity will result in the shortage of some raw materials. On the other hand, the development of the domestic supplier industry will soon lead to a significantly increased international turbine supply capability and promises to bring down the longer term turbine costs.

China is also a major player in many of the water segments. With its arid climate and contaminated freshwater sources, desalination is playing a big role. The Chinese stimulus package is already accelerating the largest wastewater treatment effort of any country.

For more information on the various McIlvaine reports on air, water, and energy visit [www.mcilvaine.com](http://www.mcilvaine.com)

## NEMA Publishes New Circuit Breaker Standard SG 4-2009

The National Electrical Manufacturers Association (NEMA) has published SG 4-2009 *Alternating Current High-Voltage Circuit Breakers*. The standard, which NEMA published under license from IEEE, was revised by the High-Voltage Power Circuit Breaker Voting Classification of the Switchgear Section of NEMA.

The previous revision of SG 4 was published in 2000 and reaffirmed in 2005.

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The material in the 2000 revision of SG 4 dealt with two areas, the first relating to construction and test issues for high-voltage circuit breakers, and the second with recommendations for handling and maintenance of high-voltage circuit breakers. The material in the second area was removed from the 2009 edition of SG 4, and published separately as SG 11-2008. This was done to keep the information available to those interested in high-voltage circuit breakers while the IEEE Switchgear Committee working groups consider this material for possible incorporation into revised editions of IEEE Std. C37.04 and IEEE Std. C37.09.

SG 4 applies to all types of high-voltage circuit breakers, with the exclusion of those used in metal-enclosed or metal-clad switchgear, and automatic circuit reclosers. High-voltage circuit breakers are most frequently installed in outdoor switchyards, used in utility transmission and distribution substations, and in large industrial power substations. Among the areas covered by the revised SG 4, not covered in existing IEEE standards, are:

- Requirements for circuit breaker operating mechanisms
- Bushing terminal connector requirements
- Ground terminal requirements
- Current transformer thermal and short-time capabilities, and accuracy classes
- Multi-ratio current transformer tap connections



- Current transformer lead identifications and polarity conventions
- Radio Influence Voltage (RIV) tests and limits
- Noise levels for outdoor circuit breakers located in switchyards
- Repetitive duty requirements for special purpose arc-furnace switching circuit breakers

The material in SG 4-2009 has been offered to IEEE for inclusion in revisions of C37.04 and C37.09. This material is presently not addressed in these IEEE documents, but it's considered important information for those who use or specify high-voltage circuit breakers. For example, this information includes the arrangements and terminal identifications of current transformers associated with such circuit breakers, and this information is not included in other standards at this time. Therefore, NEMA continues to publish this information as a service to those interested in high-voltage circuit breakers.

Ted Olsen, Chair of the SG 4 Technical

Committee that prepared this document, discussed this revision of SG 4 and stated that the willingness of NEMA to continue to publish this information demonstrates the close relationship between the members of the NEMA SG 4 Technical Committee and the IEEE Switchgear Committee that has existed for a number of decades. It is anticipated that the IEEE working groups will consider this material for addition to C37.04 and C37.09 in their revision projects that are ready to begin in the next few months.

A hard-copy of SG 4-2009 may be purchased for \$69. Or download the standard at no charge by visiting [www.nema.org/stds/sg4.cfm](http://www.nema.org/stds/sg4.cfm)

## GE and FANUC Announce Intention to Dissolve Joint Venture

GE and FANUC have announced the two companies have agreed to dissolve the GE Fanuc Automation Corporation joint venture. This agreement would allow each company to refocus its investments to

grow its existing businesses and pursue its respective core industry expertise. GE and FANUC expect the transaction to be completed by the end of this year, subject to satisfactory customary closing conditions.

Established in 1986 by the joint investments of GE and FANUC, GE Fanuc Automation Corporation grew to become a leading high-performance technology company that serves a vast array of industries around the world including the energy, water, consumer packaged goods, government & defense, and telecommunications industries. The partnership delivers hardware and software solutions, services, automation and embedded computing systems; as well as industry-leading CNC products.

Under the terms of the agreement, GE retains the software, services, embedded systems and control systems businesses globally. The company will be known as GE Intelligent Platforms, and will be led by Sylvester. FANUC retains the global CNC business. ■

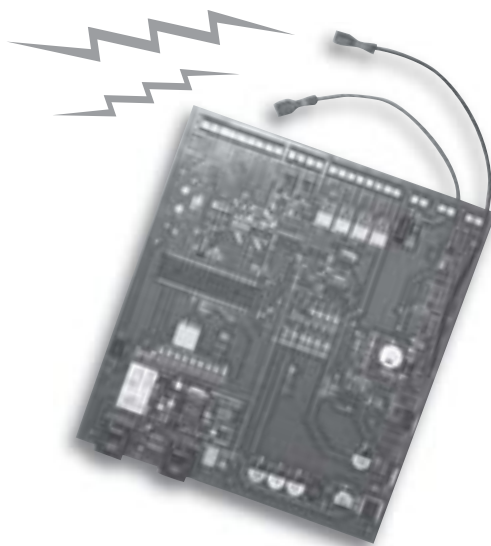
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## NEW EGSA MEMBERS

MF=Manufacturer DD=Distributor/Dealer CI=Contractor/Integrator MR=Manufacturers Rep EM=Energy Management Co.  
AA=Trade Publication AB=Trade Association AC=Engineer AD=End-User AE=Service AG=Educational Institution AR=Retiree AF=Student

**Bergari Solutions, LLC** .....(MF)  
Rosemount, MN  
(651) 270-6817 Fax: (651) 554-1674

Contact: Brian Berg, President & General Mgr.  
Business: Bergari Solutions is a manufacturer of engineered exhaust systems for industrial engine applications. Standard and Custom design silencers are available in Industrial Grade through Premium Hospital Grades in sizes from 2 to 30 in a variety of materials. Emissions reducing silencers are also available integrating 3-way catalysts, oxidation catalysts and diesel particulate filters.

**Chris Davidson** .....(AF)  
Linn, MO  
(816) 569-0471  
Contact: Chris Davidson  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Andrew Dessauer** .....(AF)  
Gladstone, MO  
(816) 216-6436  
Contact: Andrew Dessauer  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Emko Elektronik AS** .....(MF)  
Bursa, Turkey  
0090 224 2611900 Fax: 0090 224 2611912  
Contact: Ayhan Ispalar, General Manager  
Business: Emko Elektronik AS develops, manufactures, markets and sells protection and control units for generating systems since 1986. Product range: manual start unit, key start, auto start, ATS with metering, enhanced automatic genset controller with transfer switching and built-in Ethernet communication for multiple genset visualization by SCADA software, battery chargers.

**General Industries, Inc.** .....(MF)  
Goldsboro NC  
(888) 735-2882 Fax: (919) 751-8186  
Contact: Jamie Stanley, Sales & Marketing Mgr  
Business: General Industries manufactures steel subbase tanks in both UL-142 double wall and UL-2085 fire protected models. We have configurations for all enclosure mounts, generator footprints, thru tank stub up openings and many paint systems to match strict specifications.

**Geoforce Inc.** .....(AE)  
Irving, TX  
(972) 767-5927 Fax: (972) 586-7709  
Contact: Daniel Irizarry, Enterprise Sales Dir.  
Business: Geoforce Inc. provides real-time visibility of assets to the power industry through use of RFID and GPS-based hardware. Our web-based software enables companies to locate and monitor equipment, manage maintenance and compliance tasks, and send alerts based on predefined events.

**Kenny Honse** .....(AF)  
Jefferson City, MO  
(573) 659-8631

Contact: Kenny Honse  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Nick Klovzek** .....(AF)  
Linn, MO  
(573) 690-7973  
Contact: Nick Klovzek  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Davidson LeTang** .....(AF)  
Jefferson City, MO  
(573) 353-3938  
Contact: Davidson LeTang  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Thomas Ludy** .....(AF)  
Jonesburg, MO  
(636) 488-5491  
Contact: Thomas Ludy  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Darryl McNew** .....(AF)  
Jefferson City, MO  
(573) 395-3375  
Contact: Darryl McNew  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Douglas Meyer** .....(AF)  
Owensville, MO  
Contact: Christopher Douglas Meyer  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Kyle Polk** .....(AF)  
Des Arc, MO  
(573) 915-6197  
Contact: Kyle Polk  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**S&F Radiator Service, Inc.** .....(AE)  
North Bergen, NJ  
(201) 864-6535 Fax: (201) 864-2064  
Contact: Robert Duran, Vice President  
Business: S&F Radiator Service has been serving the industrial heat exchanger market since 1973. We offer new and rebuilt units as well as same-day onsite repair service available in the tri-state area.

**Nathan Shepherd** .....(AF)  
Eldon, MO  
(573) 375-0068

Contact: Nathan Shepherd  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Chris Smith** .....(AF)  
Pleasant Valley, MO  
(816) 415-9234  
Contact: Chris Smith  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Brian Stiefferman** .....(AF)  
Bonnotts Mill, MO  
(573) 897-3228  
Contact: Brian Stiefferman  
Business: Electrical Power Generation student at Linn State Technical College, planning to graduate in Fall 2009.

**Unified Growth Partners** .....(AE Full)  
Rye Brook, NY  
(203) 422-0658 Fax: (914) 801-5283  
Contact: John Milne, Partner  
Business: Unified Growth provides private equity solutions to small and middle-market growth companies. We partner with talented management teams, offering both financial and operational resources to help these businesses succeed. Our involvement can range from fulfilling the traditional role of private equity sponsors to help fund growth initiatives, to becoming actively involved in supporting the day-to-day management of our portfolio companies.

**United Alloy Inc.** .....(MF)  
Janesville, WI  
(608) 758-4717 Fax: (608) 758-1272  
Contact: Seth Churches, Sales Manager  
Business: Custom manufacturer of sheet metal products, parts and components with powder painting capabilities including UL-142, ULC 5601-07 listed fuel tanks, frames, trailers, enclosures, industrial and agricultural vehicle components.

**Worldwide Power Products, LLC.** .....(DD)  
Houston, TX  
(713) 434-2300 Fax: (713) 434-2394  
Contact: Will Perry, President  
Business: Worldwide Power Products specializes in power generation equipment including new and used engines and generator sets for the industrial, marine and petroleum industries. Our customers choose from a variety of major brands including Caterpillar, Cummins, Detroit Diesel, Kohler, Volvo and others. Generator sets range in size from 20 kW - 2,500 kW and engines range from 150 hp-4,000 hp.

## POWER GENERATION TECHNICIANS

Cummins NPower, the area's exclusive engine & power generation systems distributor for Cummins and Onan products is seeking qualified Field Service Power Generation Technicians to diagnose, troubleshoot, & repair electrical generator systems & related engine mechanical failures, & utility transfer switches & switchgears. Positions are available in Illinois, Wisconsin & North Dakota. To view all open positions visit our website, [www.cumminsnpower.com](http://www.cumminsnpower.com). To apply, send a resumé via email to [npowerhr@cummins.com](mailto:npowerhr@cummins.com) or fax to 651-286-2111. EEO/AA

## Generator Parts + Equipment Distribution

Scardana supplies foreign diesel engine parts worldwide, as well as pumps, oil purifiers, compressors, turbochargers, valves, compensators, etc. See also [www.scardana.com](http://www.scardana.com) We need sales representation in Central America, Caribbean, Brazil, Indonesia, Philippines. Email Philip Rink, [sales@scardana.com](mailto:sales@scardana.com)

## 2 Generator Sales

Central Power Systems & Services, Inc. – Two (2) Generator Sales positions covering Central Kansas. We offer a strong base wage, incentive program and a full benefit package (including company car, gas allowance, expense card, FREE MEDICAL insurance, FREE LIFE insurance, paid vacation, profit sharing and 401(k), etc.). Fax a cover letter, salary requirements and your resume to 816-781-4518 or e-mail it to [jobs@cpower.com](mailto:jobs@cpower.com) EOE

## Business Builder Seeks Opportunities

Looking for an experienced business builder and channel developer for your company? I have years of experience in sales, marketing and general management. Acute understanding of goals. Growing family / lifestyle businesses a specialty. If you want to get to the next level, contact me. permanent or short term. Nationwide. Please respond to [J.Kellough@EGSA.org](mailto:J.Kellough@EGSA.org), (Reference PLMJ09JB-1).

## Power Services Sales

ElecComm Power Services ('EPS') is a company that specializes in the rental and service of emergency power. EPS is offering a tremendous opportunity for someone looking to join a young company that is on the fast track within the power services market. The right candidate will have the chance to grow as the company grows. Candidate must have 3-5 yrs of business/ sales experience in distributed generation market. Company is based in Boston, but sales territory would include all of New England. Send all inquiries to [bkerins@elecommmps.com](mailto:bkerins@elecommmps.com).

## Generator Technicians

Due to our continued growth, Central Power Systems & Services, Inc. has immediate openings for Generator Technicians at several of our Missouri, Kansas and Oklahoma facilities. We offer a strong base wage and a full benefit package (including FREE MEDICAL & LIFE insurance) and PAID RELOCATION depending on skill set. Fax a cover letter, salary requirements and your resume to 816-781-4518 or e-mail it to [jobs@cpower.com](mailto:jobs@cpower.com) EOE

## GENERATOR SERVICE TECHNICIANS

KELLY GENERATOR & EQUIPMENT, INC., the mid-Atlantic leader in standby electrical generators is seeking experienced Generator Technicians. We are a full service distributor of emergency standby and prime power located in the mid-Atlantic region that covers Delaware, Maryland, Northern Virginia, West Virginia and Washington, DC.

We offer SALES, SERVICE, PARTS & RENTALS

- We have an extensive Service & Parts Department to back up your work.
- We offer factory training on the lines we represent as well as "in house" training.
- We offer medical, dental, vision, 401(k), profit sharing, short and long term disability, paid holidays, annual leave, overtime and paid "On Call."

Must have a High School Diploma (Vo-tech or GED), 3 – 5 years experience servicing industrial generator sets and associated equipment. Must be able to service, repair and troubleshoot the engine, as well as the alternator end and controls of the equipment. MILITARY A PLUS! Visit us on our website at [www.kge.com](http://www.kge.com). Fax RESUMES to 410-257-5227 or e-mail to [dkelly@kge.com](mailto:dkelly@kge.com).

## Generator Set Sales/Service

Experienced sales/service engineer needed by southern California company to sell engine generator sets.

Please respond to [J.Kellough@EGSA.org](mailto:J.Kellough@EGSA.org) (Reference PLND06JB-1).

## RENTAL SALES

KELLY GENERATOR & EQUIPMENT, INC, the mid-Atlantic leader in standby electrical generators is seeking an experienced RENTAL SALES person to join our team. We are a full service distributor of emergency standby and prime power located in the mid-Atlantic region: Delaware, Maryland, Washington DC, Northern Virginia and West Virginia.

Develop strong relationships with electrical and general contractors, home builders, event companies, industrial and commercial end users and rental houses. Focus will be on the rental (and sales) of mobile generator sets as well as renting load banks. We offer a solid base with commission, medical, dental, vision, 401(k), profit sharing and more. FAX resumes to 410-257-5227 or e-mail [dkelly@kge.com](mailto:dkelly@kge.com).

## Generator Field Technician

PM Technologies, LLC has several immediate openings for Generator Technicians. We are located and operate in Michigan, Ohio and Northern Indiana. High School diploma or equivalent a must. Military experience a plus. Must be able to troubleshoot and repair the engine (diesel and gaseous) as well as the generator end. Customer interaction will be required on a daily basis. We need highly motivated, self sufficient people to assist in growing our expansion efforts at new branch locations. Benefits include company vehicle, 401k, health, dental and vision coverage as well as paid bonuses for new account procurement. Please Fax resumes to 248.374.6408 or email to [dpopp@pmtech.org](mailto:dpopp@pmtech.org)

## Generator Service Technician

Johnson & Towers, Inc. A leader in the power systems industry is currently accepting applications for an experienced Generator Field Service Technician. Immediate opening for an experienced Generator Technician. Capable of maintenance, repairs and troubleshooting to diesel and gaseous generators for a variety of commercial and government clients. Ideal candidate would possess the following: abilities to repair, troubleshooting and perform start up of generators and switchgear. Ability to work alone or in a team environment. The availability and desire to take a full-time permanent field service position. A clean driving record, background. Candidate must possess at least 3 years experience working on Generators and Switch Gear. Benefits include health, dental, life, short and long-term disability plans, along with a 401k plan. Please submit resume to [rdiem@johnsontowers.com](mailto:rdiem@johnsontowers.com)

## Generator Sales

Pacific Power Products is the authorized distributor for MTU-Onsite Energy and Waukesha in Alaska, Hawaii, Washington and Oregon territory and has several opening(s) for outside salespeople. If sales is a profession that interests and motivates this could be a career opportunity that lasts a lifetime. The position is well supported with dedicated project managers and a strong inside sales team. Successful candidates will have working knowledge of power generation equipment but all applicants with a technical leaning and attitude for sales will be considered. Pacific offers a market competitive compensation package including base, car allowance, health insurance and 401K. Forward resumes to [relder@pac-power.com](mailto:relder@pac-power.com)

## Generator Field Technician-Experienced

Full-time experienced generator field technician opening in Ft. Lauderdale, FL. Requires advanced knowledge of standby generator systems with minimum 5 years experience. Working knowledge of 12 & 24 VDC controls. Company offers a full comprehensive benefits package. Competitive wage, company vehicle, laptop and cell phone for qualified candidates. Send resumes to [careers@acfpower.com](mailto:careers@acfpower.com) or fax to HR at 813-621-6980.

## Experienced Power Generation Associates Wanted!

Penn Power Systems, Northeast Energy Systems and Western Energy Systems, leaders in the power generation business, are seeking experienced professionals for various positions within our company. We are actively seeking experienced field service technicians in the Northeast and Western U.S. markets. Candidates should be familiar with natural gas and diesel prime movers with industry experience and knowledge of systems and controls. Penn Power Systems and its divisions offer industry competitive salaries, medical, 401(k), and vacation benefits. All interested parties should send resumes and work related history to [jobs@pennpowersystems.com](mailto:jobs@pennpowersystems.com) or call 1-877-736-4473. **We Proudly Employ EGSA Certified Generator Technicians.** EOE M/F/D/V

## EGSA Job Bank Guidelines

EGSA will advertise (free of charge) EGSA Member company job openings in the Job Bank. Free use of the Job Bank is strictly limited to companies advertising for positions available within their own firms. Companies who are not members of EGSA and third-party employment service firms who service our industry may utilize the Job Bank for a \$300 fee. Blind box ads using the EGSA Job Bank address are available upon request; company logos may be included for an additional fee. EGSA reserves the right to refuse any advertisement it deems inappropriate to the publication. Please send your classified ad (limited to about 50 words) to: EGSA Job Bank, 1650 S. Dixie Hwy, Suite 400, Boca Raton, FL 33432. Or, send it via e-mail it to: [J.Kellough@EGSA.org](mailto:J.Kellough@EGSA.org)



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